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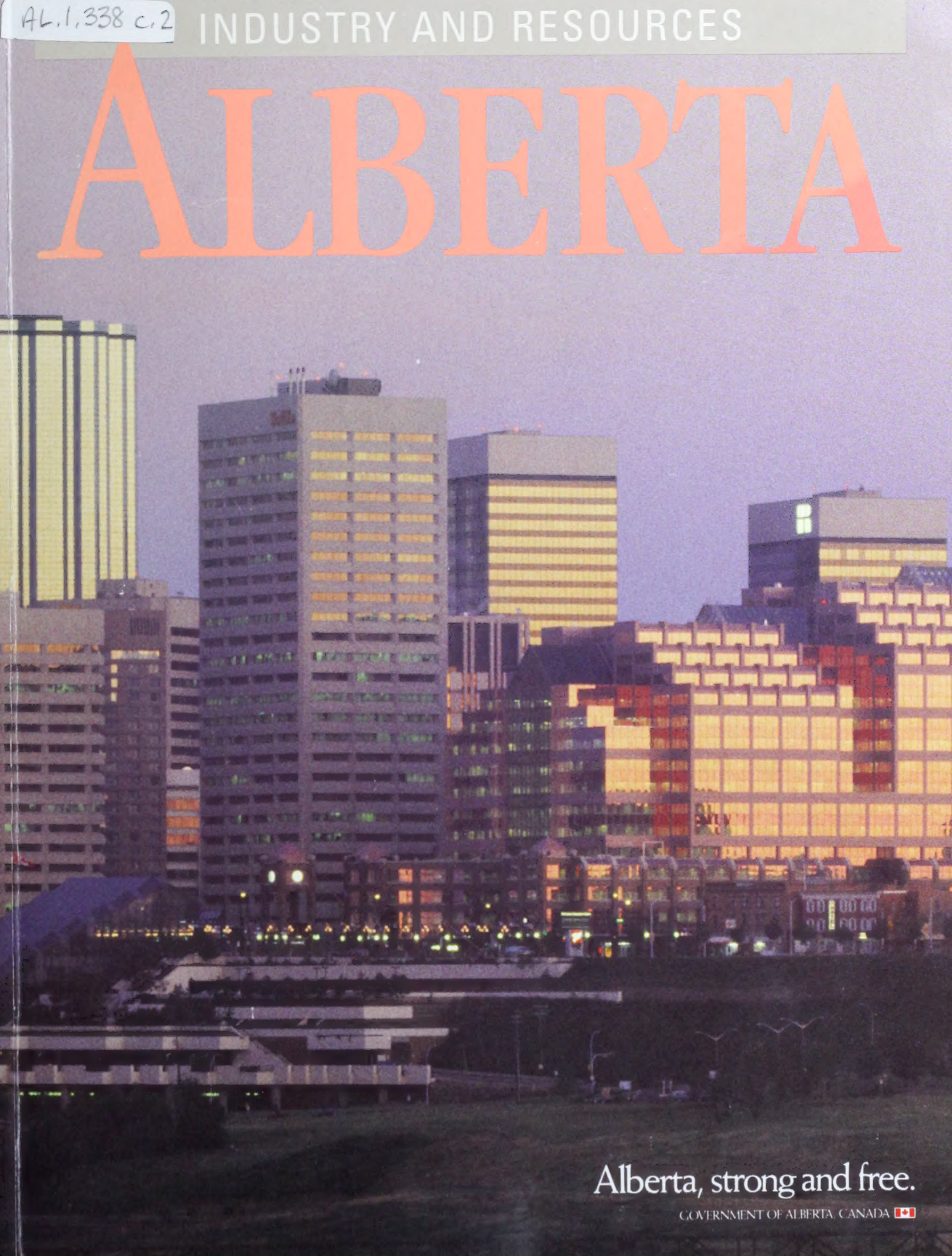
INDUSTRY AND RESOURCES

# ALBERTA



Alberta, strong and free.

GOVERNMENT OF ALBERTA CANADA

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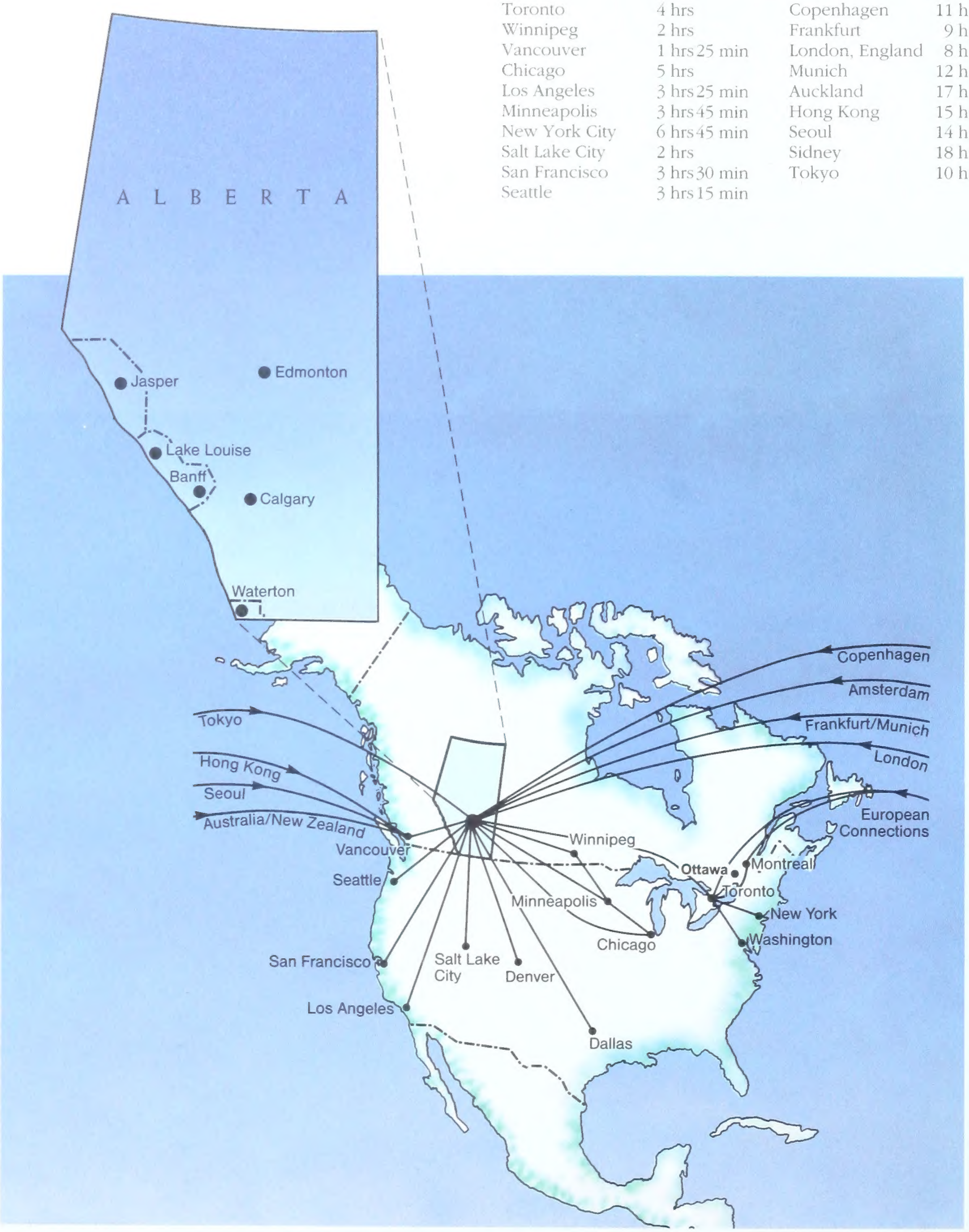

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# ALBERTA

## INDUSTRY AND RESOURCES

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# MINISTER'S MESSAGE

As we prepare to meet the exciting challenges of the 1990s, Alberta's rich and varied resources and the vitality and spirit of the people position the province for the most dynamic decade of growth in its history.

This publication is a comprehensive description of Alberta's people, land and lifestyle, a reflection of the challenges and achievements that have marked Alberta's history, and a review of the opportunity industries that will provide the basis for a strong and diversified economy for Albertans.

The text, graphs, tables and maps of this document reveal a province of virtually unlimited potential.

If you require further information in specific areas, I encourage you to contact one of the offices of Alberta Economic Development & Trade which are listed at the back of the publication.

Peter Elzinga

Peter Elzinga
Minister
Alberta Economic Development & Trade

# INTRODUCTION

Alberta's strong and diversified economy is the product of many influences. It is shaped by energy wealth, rich agricultural land, extensive forests, physical beauty and a strategic location in relation to some of the world's largest and growing markets.

Alberta has a solid industrial base and a vigorous free enterprise spirit. The Province's well-educated and productive population is determined to capitalize on Alberta's natural endowment in order to create and pursue new opportunities for economic growth and diversification.

For more than a decade, per capita investment in science and technology, education, communications and transportation has exceeded the averages of other Canadian provinces – setting the stage for the latest chapter in Alberta's economic story. It is a chapter that will unfold in an international context, as Alberta continues to build its reputation as a fair and highly competitive trading province.

Presented in this publication are analytical descriptions and statistical data concerning the industries and resources of the Province. They are general in nature to provide background information for both market research and general interest. More specific data and informative detail are available from the various departments. Chapter 11 contains a complete list of the Alberta government departments, selected federal and provincial agencies and Crown corporations, and key Government of Canada departments.

Much of the statistical data comes from either Statistics Canada or the Alberta Bureau of Statistics. Other statistics come from a number of Alberta government departments and agencies. Our debt to these organizations is gratefully acknowledged. At the time of going to press, the data published were the latest available; however, new information is being developed regularly and statistics are continually being updated.

Information for this publication was obtained from officials in a variety of Alberta government departments and agencies. Officials of these departments welcome further enquiries concerning their areas of specialty and will supply additional background information not available within the scope of this publication.

We also wish to thank the Alberta government agencies involved in the updating and provision of maps and photographs, and those who assisted in ensuring accuracy and reliability through the draft and final review processes.

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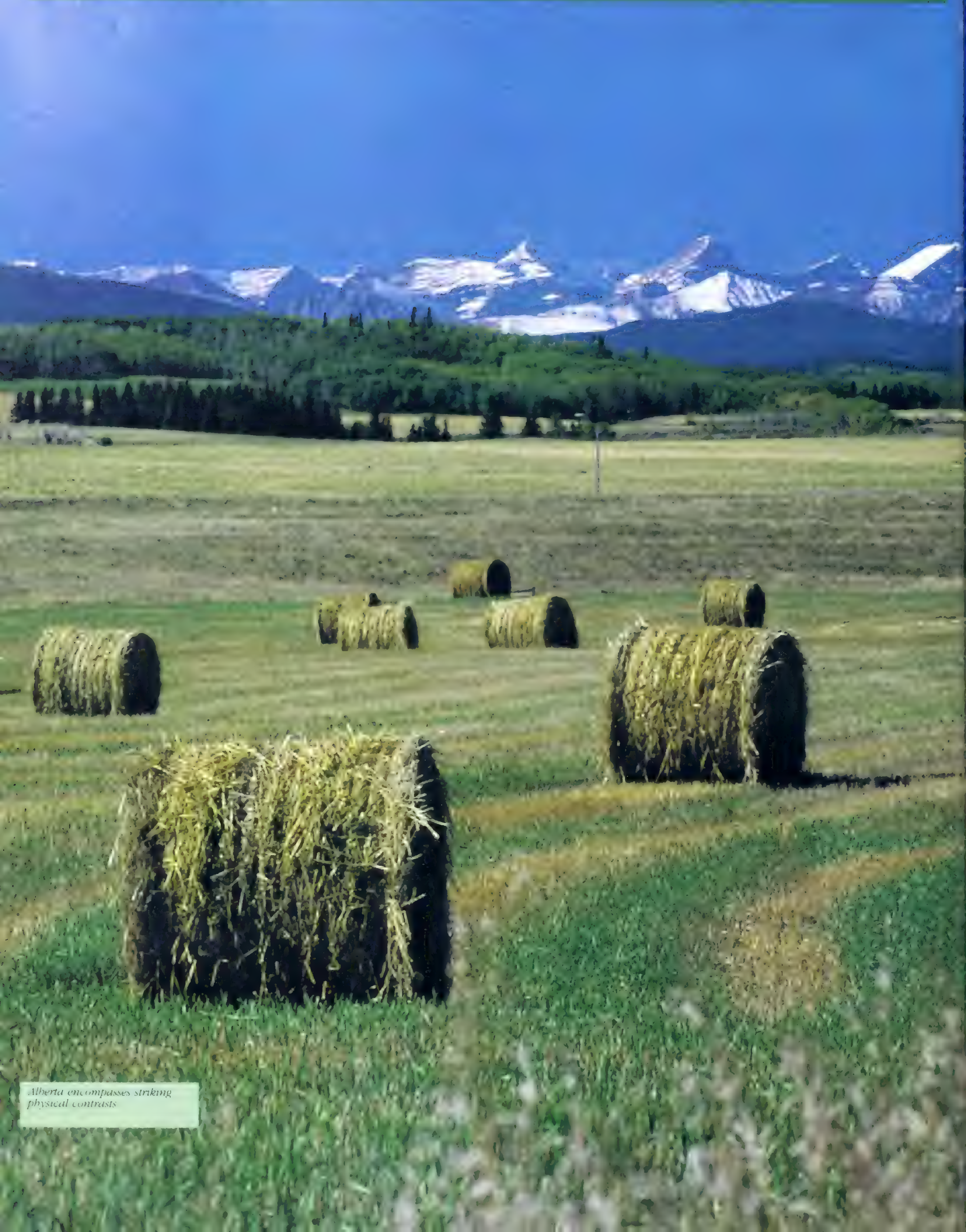
# 1 THE LAND



*Alberta encompasses striking physical contrasts*

The physical environment of Alberta has exerted enormous influence on patterns of growth and industrialization in the province, fostering the vital energy, agriculture and forest industries and providing the spectacular scenic diversity which has made the province a prime tourist site.

Alberta's physical dimensions, its location, its landforms and geologic makeup have combined with climate, soils, vegetation and drainage to shape the course of human activities in this economically vibrant, resource-rich part of Canada. A brief look at Alberta from a geographic and geologic point of view is therefore a useful starting point in any examination of the province's economy.

# GEOGRAPHY

Geography has been defined as the branch of science that deals with the surface of the earth through study of its natural features and analysis of how these features interrelate.

A geographic "snapshot" of Alberta reveals a land of often astonishing physical contrast – a fact which helps to explain both the diversity and strength of the economy and the incredible challenges which have been overcome in the course of development.

One of the most striking features of Alberta is its size. Imagine an area the combined size of West and East Germany, the Netherlands, Belgium, Luxembourg, Switzerland, Denmark and Sweden. Together these countries cover 66 million hectares (more than 660,000 square kilometres) about the same amount of land encompassed by Alberta. In another comparison, Alberta covers more territory than the states of Louisiana, Alabama, Georgia, Mississippi and Florida combined.

In terms of the Canadian picture, Alberta represents one fifteenth of the country's land base

Situated in the northwestern part of North America between 49 degrees and 60 degrees north latitude and 110 degrees and 120 degrees west longitude, Alberta is 1,217 kilometres in length from north to south and between 293 and 650 kilometres in width from west to east.

These boundaries encompass a truly remarkable mix of geographical features. The northeastern corner of Alberta, for example, is part of the Canadian Shield and consists largely of ice-scoured plain. Here, climate, topography and location tend to limit the potential for agriculture and forestry while favouring wildlife and recreation as well as possible mineral development in the future. In contrast, the northwestern part of the province boasts some of the province's most fertile farming areas and a thriving forest industry.

Roughly half of the southwestern section of the province is dominated by mountains and foothills ridges – striking reminders of the glaciers that, over millions of years, have formed, moved and receded in the area. Indeed, alpine glaciers and icefields, maintained by the rough balance between winter snowfall and summer melting, remain today on some of Alberta's higher mountains.

**Alberta's Geography**

- Alberta covers 661,185 square kilometres and accounts for about one fifteenth of the total land area of Canada.
- Alberta spans parts of the Canadian Shield, the Rocky Mountains and foothills, and the Interior Plain of North America.
- Rocky Mountain peaks located in Alberta range from 2,130 to 3,747 metres in elevation.
- The world's largest fresh water delta is located at the confluence of Alberta's Peace and Athabasca rivers.
- Alberta has about 30% of Canada's occupied agricultural land and still offers potential for expanded cultivation.

*Columbia Icefields*

Threading through the rugged mountain terrain, where peaks range from 2,130 to 3,747 metres in elevation, are several major passes at elevations of between 1,128 and 1,830 metres. The larger valleys formed by the glaciers have shallow slopes, which allow relatively easy road and rail development – and with it, access to a mountain playground which has become one of North America's most popular tourist attractions.

Given the challenging terrain, development in the mountains has understandably followed the course of major highways. However intensive industrial development (mining etc.) has been limited since much of the mountainous region is part of national and provincial parks and provincial forest reserves. The latter contain both production forests and those protected in order to preserve valuable wildlife habitat, watershed, recreation sites, and natural and wilderness areas.

The foothills, which form a gentle link between mountains and prairie landscape, feature heavily forested areas and grasslands used for grazing cattle. Beneath their surface, the foothills contain some of the province's richest deposits of sour gas and coal.

The remainder of the province – approximately 90% of the land area – forms part of the Interior Plain of North America. In this context, the plains are not confined to the rolling prairie of the south and the central Alberta parkland (an area of treed and grassy terrain encompassing many lakes and most of the North Saskatchewan River drainage basin). They include the forested areas that dominate the northern part of the province and the vast stretches of northern muskeg that overlay much of Alberta's oil and gas and oil sands resources.

The plains region also encompasses such unusual features as south central Alberta's spectacular "badlands." The rugged coulees and bizarre rock formations shelter one of the world's richest deposits of dinosaur remains – a fact that fuels both scientific interest and tourist activity in the area.

The plains, too, were affected by glaciers. Continental glaciers extended from the Hudson Bay region to the foothills, where they joined with ice of alpine origin. Some surfaces of the plains have been eroded by ice and meltwaters, but most show evidence of having retained materials carried along by the moving ice. In fact, the productivity of Alberta soils is directly linked to this glacial activity. Since the general slope of the land in what is now Alberta was toward the melting continental ice mass, meltwaters from the retreating glaciers and run-off from land surfaces formed ponds against the ice front at successively lower levels across the plains. The clays which were widely deposited as a result of this process are among the best parent materials for soil development, and the flat to gently undulating terrain is excellent for agriculture.

Adding interest to the plains landscape are a variety of moraines – accumulations of earth and stones deposited by glaciers. Among the most visible of these are the "hummocky" moraines – mounds, ridges and doughnut-shaped knobs that rise up to 10 metres above the surrounding landscape.

Rough topography and many sloughs in moraine areas do not favour agriculture. Yet cultivation is not uncommon in these areas because the soil is often relatively stone-free and there is less problem from erosion than in more humid regions. The water bodies found in moraine areas also provide some of Alberta's best wildlife habitat, attracting a wide range of migratory waterfowl and shore birds to the "pot and kettle" topography which occurs in many parts of the province.

The general surface slope of the land is from west to east in southern Alberta and from southwest to northeast in northern Alberta. Elevations range from approximately 1,220 metres in the foothill valleys to less than 215 metres in the northeast, near the margin of the Shield. Many uplands such as the Cypress, Porcupine, Swan, Clear and Buffalo Head Hills and the Caribou, Birch and Pelican Mountains rise as high as 760 metres above the neighbouring plains – and accentuating this contrast are numerous river valleys ranging from 30 to 230 metres in depth.

The Peace-Athabasca delta complex – a roughly 9,000 square kilometre expanse of northeastern Alberta landscape dotted by mud flats, muskeg and shallow lakes – is the world's largest fresh water delta. Rich in wildlife, the area has long been important to the fur trade.

The prairie plains of Alberta appear flat, particularly in the southern part of the province. This is due to a relative lack of trees and to clean dry air which makes it possible to see long distances. Also intensifying the impression is the dramatic contrast of sweeping grasslands with the rough foothills and mountain skyline to the west. In reality, plains topography is quite diverse, broken at intervals by the deep valleys, coulees and outwash channels left by retreating glaciers.

Alberta has about 30% of Canada's occupied agricultural land – an area representing almost three times the agricultural land in Ontario, four times that of Quebec and over nine times that of British Columbia. Moreover, in each of these other provinces, land is used that would be considered submarginal for agriculture in Alberta.

The soil patterns of Alberta reflect the influences of soil forming factors – parent materials, slope and drainage, climate and vegetation – acting through time and modified by human use. The effects of the ice age are still pronounced and there are many local variations in soil. Post-glacial erosion and deposition, weathering of bedrock and of drift of various origins, and organic build-up are all reflected in soil patterns.

Alberta's four major soil groups – brown, dark brown and black (developed under grassland) and grey wooded (developed under forest vegetation) – can be linked to successive climate changes that occur from the southeast to the northwest part of the province. These changes affect both the colour of the soil and the amount of organic material it contains.

Although only about one quarter of the brown soils found in the semi-arid shortgrass country of southeastern Alberta are under cultivation (often with the help of irrigation), these soils support millions of acres of native pasture for livestock grazing.

The dark brown soil zone – an arc of land surrounding the south central Alberta city of Lethbridge and stretching from the Alberta/U.S. border to the Saskatchewan border – is slightly less arid than the brown soil zone. Approximately half of the 9 million acres of dark brown soil, including several hundred thousand acres under irrigation, are cultivated. The area is a major producer of wheat.

Black soils, developed in a dry sub-humid climate, extend northward from the Alberta/U.S. border in the southwestern part of the province to include the central parkland and the area surrounding Alberta's capital city of Edmonton. About two thirds of the black soil zone is cultivated, yielding a wide variety of crops, including canola and the barley which helps to support the area's extensive livestock industry.

*Foothills of the Rockies*

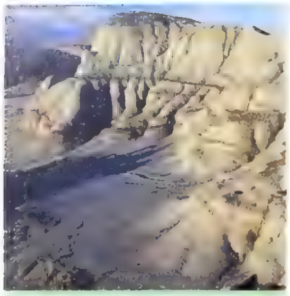
Grey wooded soils, developed largely under mixed forest cover, are the most widespread, occurring in a sub-humid climate and present in almost the entire northern part of the province. Because of frost and drainage limitations and generally low fertility, only 5% to 10% of these soils are cultivated, producing mainly coarse grains and hay.

Trees are the major "crop" produced in the grey wooded soil zone, and cover virtually all of the northern half of the province. This resource holds the key to Alberta's rapidly expanding forest products industry.

Also in the north, some 10 million acres of soils characterized as dark grey and dark grey wooded have developed under fairly continuous tree cover and in areas with a dry sub-humid or sub-humid climate. Such soils are widely cultivated in north central Alberta and in the Peace River and Grande Prairie areas of northwestern Alberta. Generally high in productivity, they produce a variety of crops.

Special conditions within Alberta's major soil zones have produced areas of highly acidic (Podzol) soils or saline (Solonetzic) soils. Podzol soils are present in some of the most humid upland areas and are rarely cultivated. Solonetzic soils have developed largely in grassland areas where parent materials are high in sodium. Some are cultivated but are less productive than adjoining grassland and parkland soils. Organic soils – those with a thick peat surface – are often associated with grey wooded soils. Although drainage and cultivation of these soils is limited – mainly because better soils are available elsewhere – these lands provide an excellent source of commercial peat moss.

Cultivation is expanding in Alberta, partly in new areas (largely in the Peace River region) and partly within settled areas where farmers are clearing, irrigating, draining and otherwise intensifying their use of the land. Balancing this, some cropland is reverting to forest and rough pasture and some lands are being converted to urban and industrial uses. Although some potential remains in Alberta to expand cultivated land areas, the amount of good undeveloped land is limited.



*Badlands, Red Deer River Valley*

**Alberta's Geology**

- Devonian rocks, formed under ancient seas more than 350 million years ago, contain large deposits of limestone, gypsum and salt and much of Alberta's gas and oil reserves.
- The "younger" Cretaceous strata which underlie Alberta's plains contain enormous mineral wealth in the form of oil sands, thermal coal, oil and gas, and metallic and industrial minerals.

# GEOLOGY

Geology is the branch of science that traces the earth's history through its structure, rocks and surface features. In Alberta, millions of years of geologic history are recorded in the province's current wealth of energy resources and vast industrial mineral deposits.

Except for its extreme northeast corner, Alberta forms part of the Western Canada sedimentary basin, a large area extending from the International Boundary along the southern margin of the Prairie Provinces to the Mackenzie River delta bordering the Arctic Ocean.

The region is underlain by sedimentary rock formations of different ages deposited in ancient seas and low lying alluvial or coastal plains which covered much of Western Canada during the Paleozoic and Mesozoic eras (500 million to 60 million years ago). During the early Tertiary period, about 50 million years ago, the western margin of the basin was uplifted and the strata were folded and faulted to form the Rocky Mountains and foothills.

The composition and structure of the province's bedrock formations reflect three major divisions: The Canadian Shield, the Interior Plain, and the Rocky Mountains and foothills.

The smallest of these divisions – the

Canadian Shield – occupies about 15,540 square kilometres in the extreme northeast corner of Alberta, adjacent to Lake Athabasca. Here, rocks of Precambrian age have links to the very beginnings of geologic time. Most common among these are granite, gneiss and various types of schist. In other parts of Canada, similar rocks have been found to contain important deposits of metallic minerals. This suggests there is considerable scope for metallic minerals exploration in northeastern Alberta. To date, traces of uranium and molybdenum minerals have been found in these Shield rocks, but no commercial mineral deposits have yet been developed.

Most of Alberta lies within the Interior Plains, a region underlain by nearly flat lying layers – or strata – of sedimentary material which varies in composition and origin. Devonian rocks, formed during a time when the first trees and amphibians were appearing on earth some 350 million years ago, underlie the lowlands of northeastern Alberta at the margin of the Canadian Shield. From there, the Devonian strata dip gently southwest under the cover of Cretaceous strata. Although considerably "younger" in geologic terms than the Devonian rocks, Cretaceous rocks were being formed when the last of the dinosaurs still roamed over what is now Alberta.

Devonian rocks contain large deposits of limestone, gypsum and salt on or near the surface, and the salt deposits continue at greater depths beneath much of east central Alberta. Also, the more deeply buried Devonian strata of northwestern and central Alberta contain much of the province's gas and oil reserves. They are found in ancient reef-rocks that grew in the seas covering the area during Devonian time.

Cretaceous and Tertiary strata constitute the bedrock over the larger part of the plains, forming a series of sandstone and shale formations which extend from the Canada-U.S. border in the south to the British Columbia and Northwest Territories boundaries in the northwest. In general, the formations dip gently to the south and west, with the result that successively younger strata form the bedrock toward the margin of the foothills of the Rocky Mountains.

Cretaceous strata of the plains contain much of Alberta's mineral wealth, including the Athabasca and Cold Lake oil sands, the sub-bituminous (thermal) coal deposits of central and southern Alberta, and a significant portion of the conventional oil and gas reserves. They also contain major deposits of metallic and industrial minerals, including iron, bentonite and kaolin clays.

The Rocky Mountains and foothills form a belt of folded and faulted sedimentary strata from 40 to 200 kilometres wide, extending along the southwestern margin of the province. The strata range in age from Precambrian to Tertiary. In general, the foothills are composed of sandstone and shale formations of the Jurassic and Cretaceous ages, and the Rocky Mountains proper are composed of carbonate and quartzite formations ranging in age from Precambrian to Triassic. The foothills contain important reserves of sour gas and high grade bituminous coal, much of which is of coking quality. Vast reserves of limestone and dolomite are found within the front ranges of the Rocky Mountains and scattered deposits or showings of other industrial and metallic minerals have been reported from this region.

Except for some of the higher ridges in the Rocky Mountains and the Cypress Hills in the southeast, the province was covered by thick ice sheets during the Pleistocene epoch (approximately 10,000 to 15,000 years

*Herbert Lake Banff National Park*

- The Rocky Mountains contain vast reserves of limestone and dolomite while the foothills have important reserves of sour gas and high grade bituminous coal.

ago). Consequently, much of the land surface is covered by unconsolidated glacial sediments ranging from a few millimetres to several hundred metres in thickness. The deposits vary widely in composition, consisting of sand, gravel, clay and till (unsorted mixtures of all three materials). Although glacial deposits tend to hinder development of underlying bedrock mineral deposits in some areas, they provide much of the sand and gravel used in the construction industry, and also some of the clay and silica sand used in manufacturing such products as brick and fibreglass.

*Calgary*

**Alberta's Climate**

- Alberta's climate is characterized by cold winters, mild summers, and unusually sunny skies and dry clean air.
- Average annual frost-free days in Alberta range from 120 in the south to between 60 and 70 days in the north, where long summer days help compensate for the shorter growing season.

# CLIMATE

Alberta has what is known as a continental climate. It is characterized by vivid seasonal contrasts in which long, cold winters are balanced by mild to hot summers and an unusually high number of sunny days, no matter what the season.

The continental interior location of the province results in greater heating in summer and cooling in winter and less precipitation than in maritime areas. The mountain barriers to the west accentuate these patterns, draining the mild Pacific air of its moisture, easing the flow of cold air from the north, and contributing to the generally sunny skies and dry, clean air. Another important influence on Alberta's climate is its northerly latitude. As one moves northward, an increase in the daily hours of sunshine tends to balance the decreasing altitude of the sun.

Average summer temperatures throughout most of the province are between 15 and 20 degrees Celsius. In contrast, January temperatures range from about -8 degrees Celsius in the southwestern foothills, to -25 degrees Celsius in the northeastern corner of the province, an area dominated by cold polar air.

Although cold air covers the whole province at times, it is frequently replaced in the southwest by mild air funneling through the mountains from the Pacific Ocean. These warm "chinook" winds bring respite to large areas of southern Alberta, as winter conditions give way to melting snow and spring-like temperatures within hours. Combined with relatively light snowfall on the plains, the chinooks enable livestock and game to graze all year round.

Throughout the province, the coldest temperatures are frequently associated with low wind speeds, low moisture content and clear skies; thus the cold is not felt so bitterly as in more humid, windy areas.

The average frost-free period in Alberta is more than 120 days in the southern lowlands and can be as short as 60 to 70 days in northern and more elevated areas. In much of north central, central and southern Alberta, the length of the growing season favours production of cereal grains and other crops, while in the most southerly areas of the province, summer heat and irrigation combine to support a wide variety of specialty crops. Even in Alberta's more northerly agricultural areas – including the Peace River region – long summer daylight compensates for a shorter growing season and a variety of crops are grown successfully.

In general, precipitation increases as one moves from the southeast to the northwest part of the province. Thus the semi-arid conditions that prevail in southeastern Alberta's shortgrass prairie country, gradually give way to the dry sub-humid climate of the central Alberta parkland and to the generally sub-humid climate of northern Alberta. The mountains and foothills to the west and the various hills and uplands in the northern part of the province receive the most moisture.

As examples of these variations, average annual precipitation is about 311 mm in the Milk River Basin of southeastern Alberta and along the Red Deer River near the Saskatchewan boundary. This compares to an average of 481 mm of precipitation at Edmonton, near the geographic centre of the province, 500 mm in the eastern foothills, and over 1,500 mm in some mountain locations. In the hill country above 54 degrees north latitude, annual precipitation averages 550 to 600 mm.

Low pressure centre "storm tracks" pass from west to east across Alberta. In winter, such storm tracks are predominantly south of the border in the U.S., but they shift northward into southern Alberta in spring, and into central and northern Alberta in summer. The tracks fluctuate appreciably and there may be wide variations from "normal" precipitation in any given season or year. In summer, warm, moist tropical air from the Gulf of Mexico occasionally moves into Alberta bringing relatively heavy rains, especially in the south and east. In some years, these rains are widespread, in others, absent.

This fluctuation in rainfall can lead to summer droughts. Since rain and thundershowers are generally associated with low-pressure systems, a drought can occur when a high-pressure system becomes anchored over a particular area, forcing the "rain-making" system to move elsewhere. Without rain, soil moisture levels and supplies of surface and underground water drop, plant growth slows and the danger of forest fire increases. While droughts of varying intensities occur periodically throughout the province, southeast Alberta is particularly susceptible. Canada's most extensive irrigation system has been developed there to combat the problem.

Melting snow in spring increases soil moisture levels and creates most of the annual stream runoff, leaving most agricultural areas in Alberta with spring moisture surpluses. However, summer precipitation is generally exceeded by the amount of water consumed by plants and lost to evaporation, and these early surpluses are often replaced by moisture deficits in late summer and fall.

To combat drought and moisture deficits, enlightened tillage and watershed management practices have been widely adopted in Alberta and expanding irrigation systems continue to improve the stability of agriculture in the drier southern regions. Another positive note: because of its relatively dry climate, southern Alberta is generally spared the soil erosion problems that affect more humid areas of Canada.

*Edmonton*

**Alberta's Climate**

- "Chinook" winds carrying warm Pacific air moderate winter temperatures throughout much of southern Alberta.
- Average annual precipitation ranges from more than 300 mm in semi-arid southeastern Alberta and around 480 mm in the dry sub-humid climate of central Alberta to more than 1,500 mm in more humid mountain locations.

# WATER RESOURCES

The Eastern Slopes of the Rocky Mountains contain the headwaters of two of Canada's most important watersheds – the Saskatchewan-Nelson system which drains to Hudson Bay and the Mackenzie River system, draining to the Arctic Ocean. This makes Alberta the prime custodian of an abundant water supply. While other jurisdictions have rights to a portion of waters that flow across interprovincial boundaries, Alberta retains sufficient water to support both human activity and industrial development.

Despite this abundance, differences in climate cause considerable variation in supply from one region of the province to another. Because of this, Albertans have become experts in water resource management, flow regulation, water storage techniques and sophisticated irrigation networks. All help promote balanced economic development within the province.

Approximately 64% of the land area of Alberta lies within the Mackenzie River system. The river basins that form the Mackenzie system in Alberta (the Athabasca, Peace, Slave and Hay rivers) account for 87% of mean annual river discharges leaving the province. The Churchill and Saskatchewan-Nelson river systems (the Beaver, North Saskatchewan, Battle, Red Deer, Bow, Oldman and South Saskatchewan rivers) cover 35% of the province's land area but contribute only 13% of mean annual river discharges.

Based on mean annual values, the streamflow originating within Alberta is 67.7 billion cubic metres (54.9 million acre feet) per year. An additional 67.3 billion cubic metres (54.6 million acre feet) per year flow in from British Columbia, Saskatchewan and the United States. Less than 10% of water originating in Alberta is withdrawn annually for local use.

The other source of supply is groundwater, which is highly variable in both quantity and quality. Since all 16 of Alberta's major cities and the majority of its larger towns make use of surface water supplies, less than 25% of Albertans – predominantly rural residents and those living in small communities – rely on water from wells.

Alberta rivers and streams experience seasonal variations in flow, with the bulk of water volume in most years produced by melting snow. In some years, heavy rains contribute to high water yields. This is particularly true if the rains occur in spring or early summer before soil moisture supplies have been depleted.

In the drier southern plains, the average annual water yield is less than 25 mm. In some locations it may range from zero in many years to as much as 110 mm in years with heavy snowmelt and spring rain runoff. In the west-central and northern plains, average surpluses are from 25 to 100 mm. These also vary greatly from year to year but are more likely to provide dependable full season flow. Hill areas throughout the province tend to have larger and more sustained yields than the adjoining plains. The Cypress Hills in southeastern Alberta, for example, give rise to many streams of regional importance for irrigation and stockwatering.

The largest and most dependable streamflow rises in the mountain and foothills region, where average annual yields range from 100 mm to 1,300 mm. In dry years, as much as 90% of the streamflow of the North and South Saskatchewan basin originates in the mountain and foothills region, which has only 15% of the basin area. In wet years, the proportion of flow from this region may be less than 70%, largely because of the higher rainfall on the plains. This flow is more dependable, offering better seasonal distribution and better quality than that of the plains areas. Much of this flow is captured in reservoirs where it is used to enhance the water regime for hydroelectric power developments and for domestic, urban, industrial, irrigation and recreational purposes.

By the standards of many drier regions of the world, Alberta's rivers and lakes seem large and plentiful. Yet little more than 2% of Canada's streamflow rises in Alberta. This compares to more than 23% in British Columbia, Alberta's western neighbour, and 1.7% in Saskatchewan to the east.

[illegible]

**Alberta's Water Resources**

- Alberta has a plentiful supply of good quality water, particularly in the north.
- Alberta contains the headwaters of two important Canadian watersheds – the Mackenzie and Saskatchewan-Nelson river systems.

Alberta has slightly more than 2% of the freshwater lake area of the country. The area occupied by lakes is usually given as 16,800 square kilometres, but this does not include many thousands of temporary water bodies, small potholes, marshes and muskeg areas that, in spring, have a much larger cumulative water surface. Many of these water bodies dry up in summer and fall. In others, water levels fluctuate with the seasons.

Although it has less than one tenth of the population of Canada, Alberta records more than half the country's consumptive use of diverted water, largely because it has the greatest area under irrigation. Some 466,000 hectares of irrigated lands in Alberta, mostly in the southern part of the province, represent approximately two-thirds of all Canadian land under irrigation.

The energy industry is also a major user of water. For example, significant volumes of water are pumped into bedrock formations during secondary recovery of oil and gas. Oil sands development, with its major losses of steam and evaporated water from plants and tailings ponds (which remain open throughout the winter), also contributes to the growing use of water.

With careful management for a wide range of uses, Alberta will be able to meet water requirements well into the future. Regional and seasonal deficiencies in the drier years, especially in the south, are being addressed through such projects as the $350 million Old Man River Dam. Scheduled for completion in 1991, the dam will enhance water flow in the Oldman River, ensuring a dependable year-round water supply to meet existing and future domestic, municipal, industrial and recreational uses and allowing for expanded irrigation throughout a broad swath of semi-arid southern Alberta.

*Fixed pipe irrigation*

**Alberta's Water Resources**

- Alberta lakes cover about 16,800 square kilometres – about 2% of Canada's freshwater lake area.
- Because water supplies are not uniformly distributed throughout the province, sophisticated water management systems have been developed to serve the semi-arid south.

# ENVIRONMENTAL PROTECTION

Alberta's exceptionally clean and attractive natural environment is prized by residents and visitors alike. Smog- free skies, sparkling streams, and vast stretches of wilderness beauty are all trademarks of a province increasingly concerned with preserving a priceless natural heritage.

Determined to protect the environment from the potentially harmful effects of industry, Alberta in 1971 became the first Canadian jurisdiction to create a department solely concerned with environmental matters. Since that time the Government of Alberta has established some of North America's most demanding environmental protection standards for air, land and water. It has demonstrated leadership in the area of hazardous waste management and worked closely with industry, the research community and the general public to ensure environmentally sound development in all sectors of the Alberta economy.

Reflecting this approach, the province's newly established Round Table on Environment and Economy, a high level policy advisory body to government, will work closely with similar bodies in other parts of Canada to integrate environmental and economic decision making. The Round Table is made up of representatives of a cross-section of Alberta society and includes the ministers of Environment and Economic Development and Trade as ex-officio members.

The Alberta government's environmental vision document, released in 1990, outlines 10 basic environmental principles and sets the stage for public involvement in drafting new environmental legislation that reflects the expectations of present and future generations of Albertans.

**Alberta's Environment**

- Albertans have a strongly developed environmental conscience and demand environmentally sound development.

As a result of these efforts, Alberta industries tend to have a highly developed environmental "conscience". Companies already operating in Alberta or contemplating investment in the province recognize Albertans' determination to promote "sustainable" economic development – development based on responsible management of Alberta's resources and its environment for the long term. Far from discouraging industrial development, the Alberta government is taking a leadership role in ensuring that economic growth occurs in harmony, rather than in conflict, with the environment. In Alberta, environmental factors will continue to be a significant consideration in all development decisions.

In addition to enhancing public acceptance of new or expanding developments, stringent environmental regulations are helping to create Alberta-based operations which rank among the most sophisticated and advanced in the world in terms of safety and environmental protection.

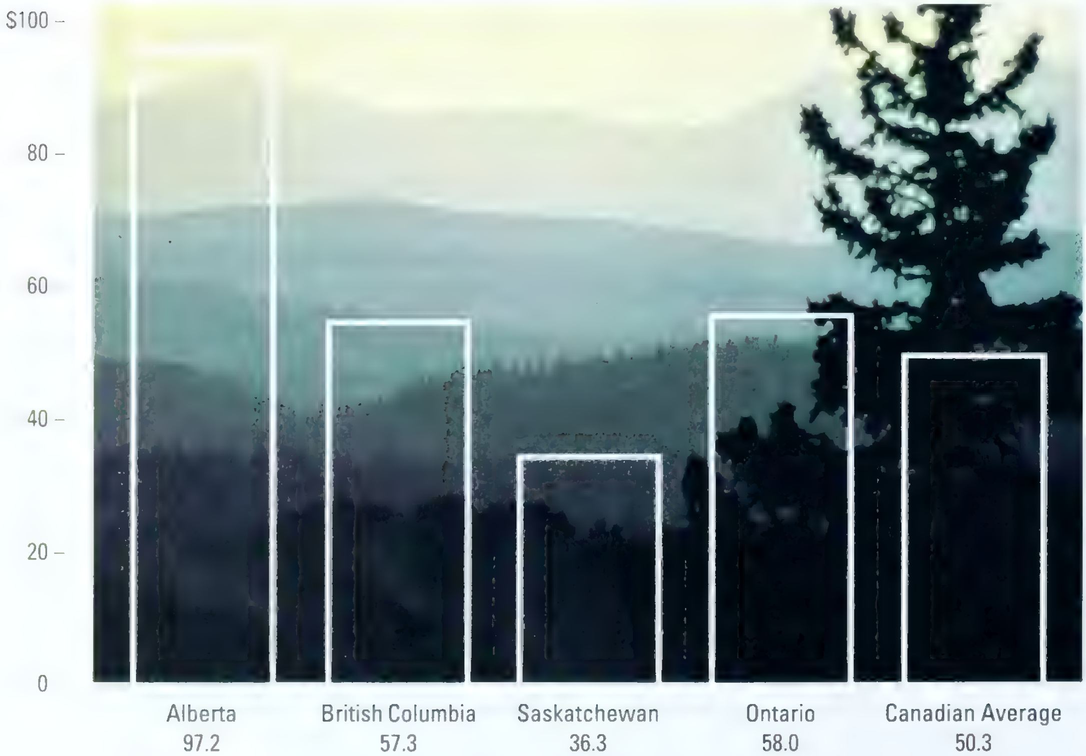
Alberta's current environmental protection requirements for the pulp and paper industry, for example, exceed the most stringent international standards. They call for strict control of the amounts of chlorinated organic compounds which can be produced by mills and released into the environment. All new and expanding mills must incorporate leading edge production and effluent control technology.

Environmental controls on the timber harvest are equally stringent, requiring operators to follow strict guidelines for building roads and stream crossings and safeguarding all aspects of the forest environment, from aesthetics to watershed and wildlife habitat. Forestry companies are also responsible for reforestation of all cutover areas within two years of completing the harvest.

Typical of Alberta's increasingly demanding air quality standards are those covering sulphur recovery from sour gas plants. Upgraded in 1988, the standards now call for all new plants sized at 2000 tonnes per day or larger to recover 99.8% of inlet sulphur. This compares to a previous recovery requirement of 99%. Standards for smaller plants (50 to 2,000 tonnes per day) have been similarly tightened, requiring them to recover

## PROVINCIAL PER CAPITA ENVIRONMENT EXPENDITURES 1988-89

CHART 1.1



SOURCE: STATISTICS CANADA

between 98.5% and 98.8% of inlet sulphur. Minimum sulphur recovery levels of 90% for plants between 5 and 10 tonnes per day and 70% for plants between 1 and 5 tonnes per day were also established in 1988.

Measures to enforce standards are taken even before development begins. Companies planning industrial projects are required by law to obtain permits from Alberta Environment before starting construction. The department assesses possible effects on the environment and sets out in the permits, terms and conditions covering such matters as plant design and pollution control.

Once the construction of a new facility is complete, the department issues an operating licence, setting limits on the amounts of pollutants that can be emitted, specifying the control technology required and outlining monitoring requirements. Licensed operators must report their monitoring data regularly to the department.

The Alberta government has achieved a high degree of compliance with environmental standards through the process of negotiation. However, if the cooperative approach fails to clear up an environmental problem, regulations are enforced through such measures as control and stop orders and prosecution.

Companies wishing to develop or expand may be asked to submit an Environmental Impact Assessment (EIA) to the provincial government. An EIA is required for most major resource developments, indeed for any significant development likely to have a marked impact on the environment. This includes everything from a major sour gas processing plant, pipeline or coal mine to a large recreation development.

The purpose of an EIA, which must be prepared by the proponent, is to describe all possible effects of the development on the environment and outline ways of either avoiding or reducing them. The Alberta government is strongly committed to the public participation process in determining the environmental acceptability of a project. Proponents must therefore keep local residents informed about their development plans. They must also consider the public's views and address public concerns in preparing an EIA. When an EIA is required, departmental regulatory approvals are not issued until review of this document is completed and government is satisfied the project is environmentally sound.

Disposal of hazardous wastes has emerged as one of society's most pressing environmental problems. In Alberta, the need to dispose of an estimated 90,000 tonnes of hazardous wastes annually prompted government to establish the Alberta Special Waste Treatment Centre, the first fully integrated special wastes treatment facility in Canada. Located near Swan Hills, about 200 km northwest of Edmonton, the plant has been fully operational since 1987. Overseeing the operation, which is run by a private company, is the Alberta Special Waste Management Corporation. The corporation was established by government in 1984, to ensure that hazardous wastes are properly treated and disposed of.

Recycling is the other side of waste management. The Alberta government promotes recycling of glass, paper and other reusable materials by providing technical information and grants to municipalities and community groups and by encouraging the public to collect and return items for recycling. The result is a series of depots throughout the province for collecting everything from used lubricating oil to paper. The only province with a comprehensive beverage container recovery system, Alberta has more than 200 depots licensed to accept glass, plastic and aluminum beverage containers.

*Swan Hills Special Waste Treatment Centre*

**Alberta's Environment**

- Alberta has established some of the world's most stringent environmental standards for the protection of air, land, water and health.
- All major resource or industrial projects proposed for Alberta require an Environmental Impact Assessment.

*Albertans actively participate in recycling programs.*

**Alberta's Environment**

- Canada's first fully integrated special waste treatment facility has been in operation at Swan Hills, Alberta since 1987.
- Alberta places a high priority on reclamation research and uses money from the Alberta Heritage Savings Trust Fund to support a unique reclamation program.

Although environmental research is a relatively new field of science, it is well established in Alberta. The province's universities, industry, and provincial and federal government agencies concerned with everything from agriculture to wildlife all pursue various aspects of environmental research. The most ambitious provincial program is conducted by the Alberta Environmental Centre at Vegreville. Opened in 1981, it provides a central facility for investigating and finding practical solutions to environmental problems in Alberta.

The centre performs environmental analyses in support of Alberta Environment's licensing, monitoring and enforcement programs and conducts research in such areas as the management of wastes, agricultural pests, water and wastewater, environmental toxicology and enhanced understanding of the province's living natural resources. In recent years, Alberta's environmental scientists have probed for signs of acid rain (with a view to maintaining Alberta's status as an acid rain-free province) and worked with the petroleum and utilities industries to determine the effects of industrial emissions on the environment and human health.

The Alberta government also commissions independent scientists to conduct research in areas ranging from the development of new land reclamation techniques to evaluation of the environmental effects of oil sands developments.

Alberta places strong emphasis on conservation and reclamation and is in the forefront of research aimed at returning disturbed lands to their former state. Major projects must be planned from a conservation perspective to minimize the impact on the environment. When land is disturbed by an industrial project, the operator must agree to restore it to its original use once the activity has ceased. As well, many parcels of crown and municipal land, once used as garbage dumps, mines, or sand and gravel pits and since abandoned, are now being reclaimed. A program financed by the Alberta Heritage Savings Trust Fund helps return these derelict sites to productive use.

The Alberta government also recognizes the potential for municipal landfills and garbage dumps to impact on the environment. Therefore, the province assists municipalities to manage their wastes more effectively. Financial and technical assistance is provided for the regionalization of municipal waste management activities. In place since 1975, the Waste Management Assistance Program has replaced approximately 200 open dumps with over 20 environmentally safe regional sanitary landfills, and more facilities will be constructed in the future. An important aspect of municipal waste management is the reduction of the amount of wastes requiring disposal.

The Alberta government also manages the province's ground and surface water. The goal is to ensure enough good quality water is available to meet the many different needs of Albertans. Multi-purpose use is the underlying principle for water management in the province. Services provided by Alberta Environment include river basin planning, hydrometric data collection, ambient water quality data collection, river flow forecasting (used to predict floods and drought), and design, construction, operation and maintenance of water management projects.

Through Alberta Environment, government grants licences for the use of water and provides grants to local authorities throughout Alberta for water management projects. Public Works, Supply and Services constructs major dam projects and Alberta Environment manages them.

Alberta Environment also administers 10 Restricted Development Areas. Known as RDAs, they include environmentally sensitive areas and land for transportation/utility corridors.

*Albertans have a strong environmental conscience*

# 2 THE PEOPLE AND LIFESTYLE

*Heritage Festival, Edmonton*

Alberta's population as of April 1988 was 2,395,000, representing a 9.2% share of Canada's population.

Overall, Alberta is relatively sparsely populated with a population density of 3.7 persons per square kilometre.

Approximately 80% of all Albertans are concentrated in the province's urban areas. In recent years, most newcomers have gravitated to the two major cities of Edmonton and Calgary. From 1976 to 1986, for example, their combined population jumped by 61% – an increase of more than half a million people. A half dozen smaller cities – Fort McMurray, Grande Prairie, Lethbridge, Medicine Hat, Red Deer and St. Albert – collectively attracted another 250,000 people during the same period.

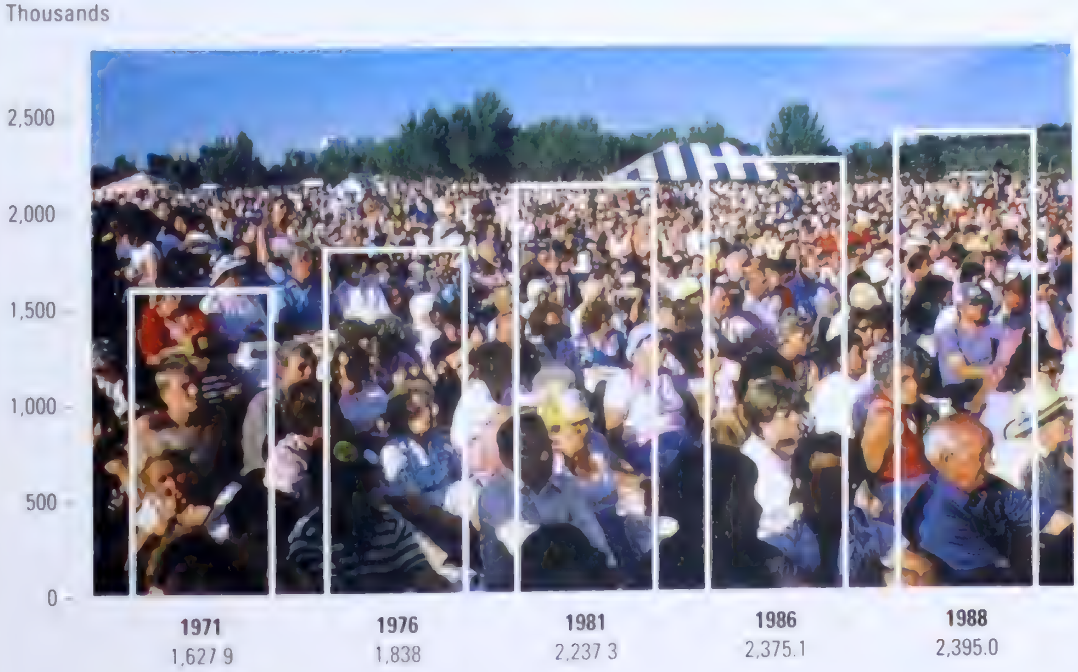
# POPULATION

Increased urbanization has been balanced in part by an overall decline in Alberta's rural population, because of increased industrialization and replacement of many small family farms with fewer large agricultural operations. At the same time, many rural areas enjoy stable populations and others are experiencing growth, as more Albertans opt for "hobby" farming and country living.

The rate of population growth in Alberta has slowed somewhat since the 1976-81 period, during which Alberta's population increased by a dramatic 21.7%. However, a fairly constant natural increase in the population combined with renewed in-migration accompanying Alberta's economic recovery is expected to continue producing a healthy but manageable population growth rate throughout the 1990s.

**Alberta's Population**

- Alberta's population of 2,395,000 in April, 1988 represents 9.2% of the Canadian total.
- Approximately 80% of Albertans live in urban areas and more than half live in the two major cities of Edmonton and Calgary.
- Alberta's population grew by more than 21% over the 1976-81 period – and continued to grow at a more modest rate in the 1980s.

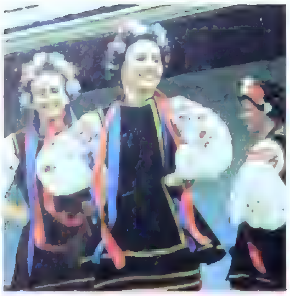


ALBERTA POPULATION GROWTH 1971-88

CHART 2.1

SOURCE: STATISTICS CANADA

# MULTICULTURAL FABRIC



*Ukrainian dancers*

**Multicultural Alberta**

- Prior to an influx of Europeans in the 1880s, Alberta was inhabited primarily by native peoples.
- Today's Albertans trace their roots to every part of the globe.
- Albertans' strong global ties help ensure success in international markets.

Tracing the roots of Alberta's 2.4 million people is an exercise which begins with the province's aboriginal peoples and leads to virtually every corner of the globe. The earliest contributors to Alberta's vibrant multicultural heritage were the province's native people, whose ancestors are thought to have crossed the Bering Sea from Asia thousands of years ago. Although they now account for roughly 3% of Alberta's population, a little more than two centuries ago native people speaking a variety of Athapaskan and Algonkian languages were sole inhabitants of what was then a vast wilderness territory. Indeed they formed the bulk of the area's population until the 1880s, when they were outnumbered by the influx of Europeans.

Drawing on their knowledge of the land and its wildlife resources, these early Albertans, particularly the woodlands tribes of the central and northern regions, became valuable partners of the European furtraders who arrived in the 18th century.

During the 1800s, as the fur trade gained momentum, natives supplied beaver and other furs to French and British newcomers who reached the west via the St. Lawrence River and Hudson Bay transportation routes. Drawn by the region's rich supply of furs, tribes close to Hudson Bay pushed westward across the prairies and into what is now Alberta. Among them were the Cree, chief intermediaries of the trade, who moved up the North Saskatchewan River to establish a major presence in the area. As a result, other woodlands and plains groups moved north, west and south prior to the arrival of the two major fur trading houses, the North West Company and the Hudson's Bay Company, late in the 18th century.

Early fur trading posts were also established at strategic points north of the North Saskatchewan River. With them came the small number of men who would contribute to the 19th century evolution of unique mixed blood people and cultures. Of particular importance are the Metis, people of dual Indian/white ancestry, whose descendants continue to form part of Alberta's cultural mosaic.

Massive population increases and changes began to occur after Canadian Confederation in 1867, Canada's acquisition of the North West Territories in 1870, and westward construction of the Canadian Pacific Railway between 1881 and 1885. The earliest new immigrants came chiefly from Ontario, with smaller numbers emigrating from Quebec. They congregated on the parkland and plains regions stretching southward from the North Saskatchewan River. Mormons settled the southwest corner of Alberta in the 1880s and 1890s, and at the same time some Germans from eastern Europe arrived at locations mainly south and west of Edmonton.

Other east Europeans, including many from the Ukraine, began arriving in Alberta in the 1890s. Like immigrants from Britain, the United States and other parts of Europe, they came in response to the Canadian government's aggressive efforts to promote immigration and encourage the major agricultural settlement which occurred between the 1890s and the 1920s.

After the Second World War, the pattern changed. Large numbers of European refugees drew on similar cultural roots but very different economic and cultural situations as they adjusted to an urbanizing Alberta. From the 1960s on, immigrants have come from all over the world, including the Pacific Rim, Asia, and the Caribbean countries.

Not surprisingly, Alberta's ethnic diversity presents occasional challenges to understanding and interaction. However, most Albertans are immensely proud of their mixed cultural heritage and the traditionally peaceful and tolerant environment that prevails in the province. Albertans of every background are encouraged to preserve their cultural history and traditions while at the same time becoming part of a cohesive provincial population, building its own distinctly "Alberta" traditions.

Considered one of the province's major strengths, this multicultural heritage has contributed to both economic and cultural growth and created the remarkably cosmopolitan outlook which Albertans bring to the international marketplace.

Today, roughly 44% of Albertans are of British descent, while other large ethnic groups include German (11%), Ukrainian (6%), French (5%), Scandinavian (4%), Dutch (3%), and native peoples (3%). Smaller numbers of people, tracing their heritage to virtually every country in the world, make up the remaining 24% of the population. English is the language of the vast majority of Albertans and most religious faiths are represented.

*Native dancers*

# GOVERNMENT

## HISTORY

Although Alberta acquired provincial status and the roots of its present system of government in 1905, government in the broadest sense was introduced to the area more than two centuries earlier, when it became part of a vast fur trading empire.

Under the 1670 Charter of the English Company of Adventurers Trading into Hudson's Bay, the "Hudson's Bay Company" gradually extended its government throughout a huge expanse of northern North America known as Rupert's Land and the North West Territory. Included was the region occupied by present-day Alberta. In 1870 these lands, by then called simply the North West Territories, were transferred to Canada and administered from the newly formed province of Manitoba.

The North West Territories received their own act and resident government in 1875. Several districts were formed including the four that would eventually make up the provinces of Alberta and Saskatchewan – Athabasca, Alberta, Saskatchewan and Assiniboia

While the territory, by 1897, had gained full responsible government based on elected representatives, the goal of the four western districts was to join the ranks of full-fledged provinces. Thus in 1900, territorial authorities launched a campaign for provincial status which culminated five years later in the creation of two new provinces – Alberta and Saskatchewan. To their north, lies a huge expanse of northern Canada consisting of the Northwest Territories and Yukon Territory.

On September 1, 1905, Alberta, named for Princess Louise Caroline Alberta, fourth daughter of Britain's Queen Victoria, became a legal province of Canada with Edmonton as its capital city.

Although disappointed over the federal government's decision to retain control of its crown lands and natural resources, Alberta otherwise gained the same status as existing provinces, adopting the Canadian parliamentary system and enjoying its enhanced powers of self-government. Control of lands and resources was transferred to Alberta in 1930.

**Alberta's History**

- For two centuries following 1670, the Alberta region was part of the Hudson's Bay Company fur trading domain.
- Control of Alberta was transferred to the Government of Canada in 1870, as part of the North West Territory.
- Alberta became a province of Canada in 1905, with Edmonton as the capital.
- In 1930, the federal government granted Alberta control over its lands and natural resources.

# GOVERNMENT TODAY

*Alberta's motto – Fortis et Liber – Strong and Free*

**Alberta's Government System**

- Canada's three orders of government – federal, provincial and municipal – each have distinct areas of jurisdiction (and in some cases shared responsibilities) within Alberta.
- Alberta has exclusive legislative authority over exploration, management and development of non-renewable natural resources, forests and electric energy.
- Government in Alberta follows the traditions and practices of British parliamentary procedure.

Albertans, like all Canadians, are accustomed to political stability, a wide range of democratic freedoms, and fair and responsive treatment from all three orders of government – federal, provincial and municipal.

Despite the complexities of managing a huge country made up of economically and geographically diverse regions, Canada's democratic system of government works remarkably smoothly. The country's 10 provinces and two territories are linked by a federal system of government in which the Government of Canada and the provincial governments each have defined areas of jurisdiction within individual provinces. In addition, the federal government has overall responsibility for the nation as a whole. Municipal governments are responsible for providing many local services within their own urban or rural jurisdictions.

The division of legislative responsibilities between federal and provincial jurisdictions is set out in the Constitution Act, 1982 and subsequent amendments. For example, defence, banking and postal service fall under exclusive federal jurisdiction while health, property, civil rights and education are among provincial responsibilities.

The provinces also have jurisdiction in the area of natural resources. This includes providing exclusive provincial legislative authority for exploring, developing and managing non-renewable natural resources, forestry resources and electric energy. The act also specifies that lands, mines, minerals – and the royalties they generate – belong to the provinces. In contrast, both agriculture and immigration are identified as joint federal/provincial responsibilities, with the federal government having final authority in the event of a conflict of legislation.

The federal and provincial governments also cooperate in encouraging trade, investment and business development by offering complementary programs and services. Because of its traditional support for free enterprise, the Alberta government is particularly active in the field of business development and international trade and investment.

Provincial and municipal governments also work closely together, since provincial governments have legislative responsibility for "municipal institutions in the province," establishing their duties and functions and providing for different forms of self-government based upon local conditions and population.

Municipal governments are responsible for providing police and fire protection as well as some public health and sanitation services. They are responsible for roads, streets and bridges and provide light, water and power utilities. They also administer some social services and transportation and recreation programs.

Local governments also play an important role in planning and designating areas within their boundaries for commercial activities, industrial development, and housing. Local school boards are elected to administer primary and secondary schools within the municipal area.

The Alberta government, like the federal government in Ottawa, has inherited the traditions and practices of British parliamentary democracy. The Legislative Assembly is the body which makes Alberta's laws. The 83 elected members of the Legislative Assembly (MLAs) each represent separate constituencies and belong to political parties. As a general rule, the party which elects the largest number of representatives forms the government, and the next largest party forms the official opposition. If there are other parties with representatives, they too are part of the opposition.

When no party has a majority, either a coalition government, with representatives from more than one party, or a minority government, may be formed. Neither a coalition nor minority government has been formed thus far in Alberta's history.

Elections must be held at least every five years but they also take place if the governing party loses the confidence of the Legislature through a defeat on a major vote. These election requirements provide the ultimate assurance of democracy in Alberta.

The primary executive function of government is filled by the Premier, who is the leader of the party forming the government, and members of the Cabinet or Executive Council, all of whom are elected members of the Legislature.

As the sovereign's representative, the Lieutenant-Governor must give assent to all laws passed by the Legislature and regulations passed by the Cabinet. This royal assent is rarely refused, since the Lieutenant-Governor is not elected and does not have authority comparable to that of the elected representatives. The office contributes to stability and continuity since the tenure of each Lieutenant-Governor usually bridges successive governments' terms.

Over the years, Alberta's governments have been conscious of their accountability to the public and of the public's rights in dealing with government. Alberta was the first Canadian province to establish the office of Ombudsman. The Ombudsman is empowered to review situations and recommend remedial action in cases where members of the public may have been improperly affected by government decisions. The Ombudsman is independent of other government officials and reports directly to the Legislature.

Alberta was also the first province to allow regular televising of debates in the Legislature. A Hansard (written record of debates) is also published.

*Legislature Building, Edmonton*

**Alberta's Government System**

- Alberta currently has 83 elected members of the Legislative Assembly, including the Premier and members of Cabinet who handle the prime executive functions of government.
- The Lieutenant-Governor, as the sovereign's representative in Alberta, must give royal assent to all Alberta laws and regulations.

# LABOUR RELATIONS

Alberta consistently has one of the best labour records of any province in Canada as well as the highest labour force participation rate (72% from 1986 to 1988) of any province in Canada. In 1988, for example, while work stoppages throughout the country resulted in a Canadian average of 18.5 lost workdays per 10,000 workers, Alberta, on the same basis, experienced only 9.5 lost days.

Alberta has the fourth largest labour force in Canada with only Ontario, Quebec and British Columbia ranking higher. In Alberta in 1988, 1,289,000 persons (717,000 males and 572,000 females) over the age of 15 were working or looking for part-time or full-time work.

Several factors contribute to Alberta's stable labour environment. Alberta's young, exceptionally well educated workforce is widely recognized for its healthy work ethic, as reflected in a per capita Gross Domestic Product that exceeds the national average by more than 13%. In addition, legislation covering labour relations in Alberta has been carefully designed to ensure fair treatment for all working Albertans while promoting consultation and accord as opposed to confrontation between management and employees.

Responsibility for labour relations is shared in Canada among the federal, provincial and territorial governments.

**Alberta's Labour Relations**

- Alberta's 1988 labour force of 1,289,000 ranks fourth in size among Canadian provinces.
- Alberta has the highest labour force participation rate in Canada – approximately 72%.

Broadly defined, the federal government is responsible for labour relations in banks, international and interprovincial transportation and communications, broadcasting, grain elevators and most crown corporations. Enterprises not regulated by the federal government come under the jurisdiction of the province or territory where they are located. Approximately 90% of employees in Alberta are regulated by provincial legislation.

Like every Canadian jurisdiction, Alberta has legislation that sets minimum employment standards.

The Employment Standards Code establishes minimum standards for hours of work, payment of wages, overtime pay, minimum wages, vacations, vacation pay, general holidays, general holiday pay, termination of employment, maternity benefits and the employment of young persons. While employers may set higher standards, they cannot give employees less than the minimum standards.

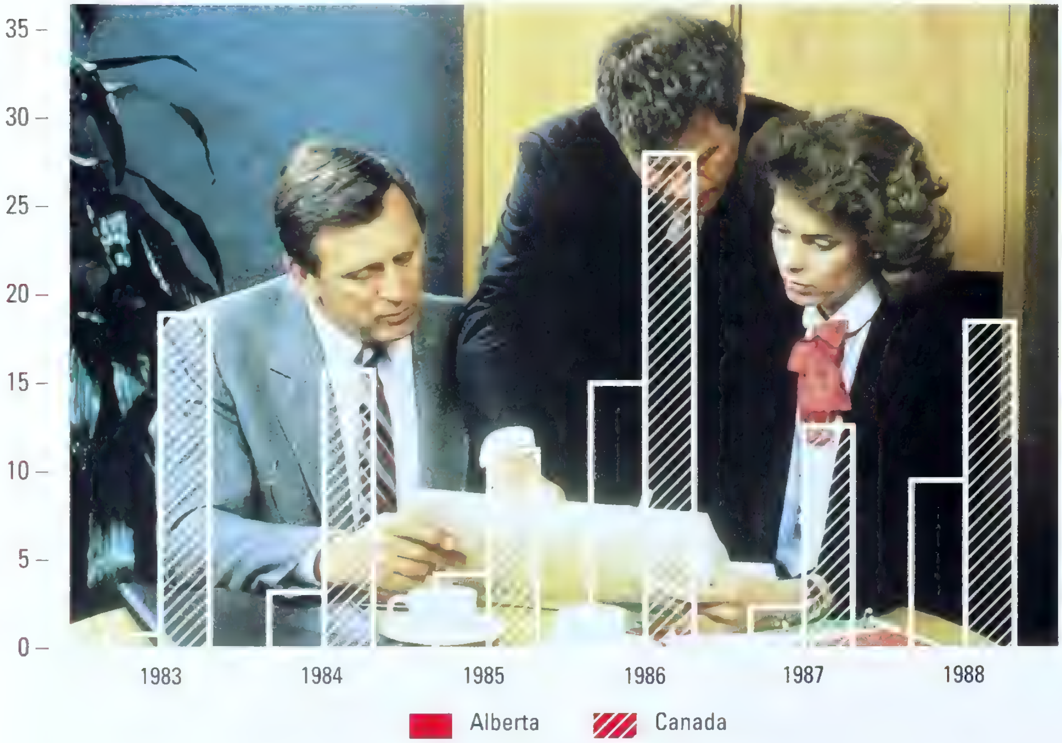
The principal legislation regulating labour relations in Alberta is the Labour Relations Code. Other acts regulate labour relations for specific groups of employees. For example, the Universities Act and the Colleges Act regulate labour relations between boards of governors of post-secondary education institutions and academic staff employees; the Police Officer's Labour Relations Act regulates labour relations between municipalities and policemen; and the Public Service Employee Relations Act regulates labour relations for civil servants employed by the Province of Alberta. Policemen, firefighters, hospital employees and provincial public servants are prohibited from striking.

As outlined in the Labour Relations Code, the Labour Relations Board is an independent, quasi-judicial tribunal that administers procedures regulating labour

LABOUR RECORD 1983-1988 Number of Workdays Lost Due to Work Stoppages Per 10,000 Workdays

CHART 2.2

SOURCE: LABOUR CANADA



relations between employers and trade unions under the jurisdiction of the act. The board processes applications for certification and revocation of trade unions as bargaining agents and regulates the procedure by which a trade union may proceed to a lawful strike or an employer to a lawful lockout. It also deals with the registration of employers' organizations in the construction industry and with unfair labour practices.

In line with the Labour Relations Code, Alberta Labour provides assistance to unions and management in resolving collective bargaining disputes through mediation. Mediation takes place at the request of either or both parties in a dispute or by order of the Minister of Labour.

A 1988 survey revealed that 273,954 people (preliminary estimate) belonged to trade unions in Alberta – less than one quarter of the total workforce. The largest union membership is in the public sector, which includes provincial and municipal employees as well as health care, education and utilities workers. Outside the public sector, the commercial and industrial construction industries are the most heavily unionized.

Human rights are given high priority in Alberta. The Individual's Rights Protection Act, administered by the Alberta Human Rights Commission, prohibits discrimination in a wide range of areas. For example, employment practices and employment advertising must be free of discrimination in the areas of race, colour, religious beliefs, ancestry, age, sex, marital status, place of origin or physical disability.

Employees' pension rights are safeguarded through provisions of the Employment Pension Plans Act. It requires that all pension plans covering employees in Alberta be registered with the Superintendent of Pensions and that they comply with strict standards designed to ensure fair treatment of pension plan members.

*Human rights have high priority*

**Alberta's Labour Relations**

- Approximately one quarter of the labour force in Alberta belongs to trade unions.
- In 1988 the number of lost workdays due to work stoppages in Alberta was approximately half the national average.

# SERVICES TO ALBERTANS

In Alberta, "social" programs encompass more than support for Albertans who are in need. They also include a wide range of education, health care, child care, housing, employment training, cultural, multicultural and leisure programs. Together, these programs help to build a healthy, socially aware and caring society and contribute to the excellent quality of life in Alberta.

In recent years, well over 75% of provincial expenditures have gone to support health, education, social services and general community support initiatives. The results of this commitment are visible throughout the province – in the high level of health care freely available to Albertans, in a host of opportunities for education and training, and in safe and supportive communities. This determination to pursue universal social well-being is also reflected in a people whose attitudes and attainments are shaped by a sense of dignity and self-worth.

# EDUCATION

*Education is the foundation for future growth*

The presence of an exceptionally well educated and skilled labour force in Alberta is hardly surprising in a province that accords top priority to lifelong learning and annually invests more than $3 billion in its education system. As a result of this commitment to education: 13% of all Albertans hold university degrees or certificates; another 15% hold other post-secondary credentials; and in any given year, more than one quarter of Alberta's 2.4 million residents are involved in some form of post-secondary academic, skills training or further education program.

Seen as the foundation for future growth, education in Alberta is designed not only to help people cope with social and technological change – but also to teach the skills and attitudes they will need to manage, shape and direct that change. For example, education is recognized as a crucial ingredient in Alberta's diversification effort. It's the key to turning an aggressive science and technology strategy into new areas of economic development, new entrepreneurial and employment opportunities, and continued prosperity in the knowledge-based economy of the 21st century.

The process begins in the earliest grades. As part of their basic schooling, Alberta's elementary students hone their problem solving abilities and computer skills, while high school students learn about the importance of science, technology and society, explore global interrelationships, and gain the skills necessary to become confident, contributing members of the community, whether they enter the workforce or go on to post-secondary learning.

Meanwhile, Alberta's highly regarded post-secondary institutions are preparing scientific, engineering, technical and management personnel for a new wave of increasingly sophisticated Alberta businesses; and government/industry/university efforts are creating a new generation of researchers in fields ranging from medicine and biotechnology to advanced materials and cold-climate engineering.

In developing education programs, Alberta uses the latest understanding of how students learn and encourages access to such innovative technology as computer courseware, audio and videotapes and satellite delivery. Distance learning provides all Alberta students with an opportunity for a complete education, regardless of location or circumstance.

Although pre-school programs are not compulsory in Alberta, they are almost universal, with 96% of eligible children participating. Schooling is compulsory for all young people, ages 6 to 16. For those attending school in grades 1 - 12, free universal education is available throughout the province.

High school programs include academic courses, vocational courses and special programs for students who have experienced difficulty in learning and who would normally be unable to achieve the standard for high school graduation. Three routes have been established to recognize achievement at the senior high school level: General High School Diploma, Advanced High School Diploma, and Certificate of Achievement.

Alberta has special programs – and in some instances special schools – for those with extraordinary needs, including disabled, handicapped or gifted students.

The public post-secondary education system in Alberta has 33 institutions: four universities, the Banff Centre for Continuing Education, 11 public colleges, four private colleges, three technical institutes, six hospital-

**Alberta's Education System**

- Alberta invests more than $3 billion annually in education.
- Albertans have one of Canada's highest education levels, with almost 30% holding university degrees, certificates or other post-secondary credentials.
- Alberta's education system plays an important role in contributing to the province's diversification and science and technology strategies and in preparing Albertans for an increasingly knowledge-based economy.

based schools of nursing and four vocational centres. Until the middle of 1986, the public system also included the Alberta Petroleum Industry Training School, which was subsequently taken over by the private sector and renamed the Petroleum Industry Training Service. In addition, there are five community consortia and 85 further education councils.

During 1987-88, Alberta's post-secondary institutions served approximately 644,000 people through full-time, part-time, apprenticeship, credit, non-credit and further education programs. In this period, approximately 150,000 people were served by the four universities and The Banff Centre for Continuing Education.

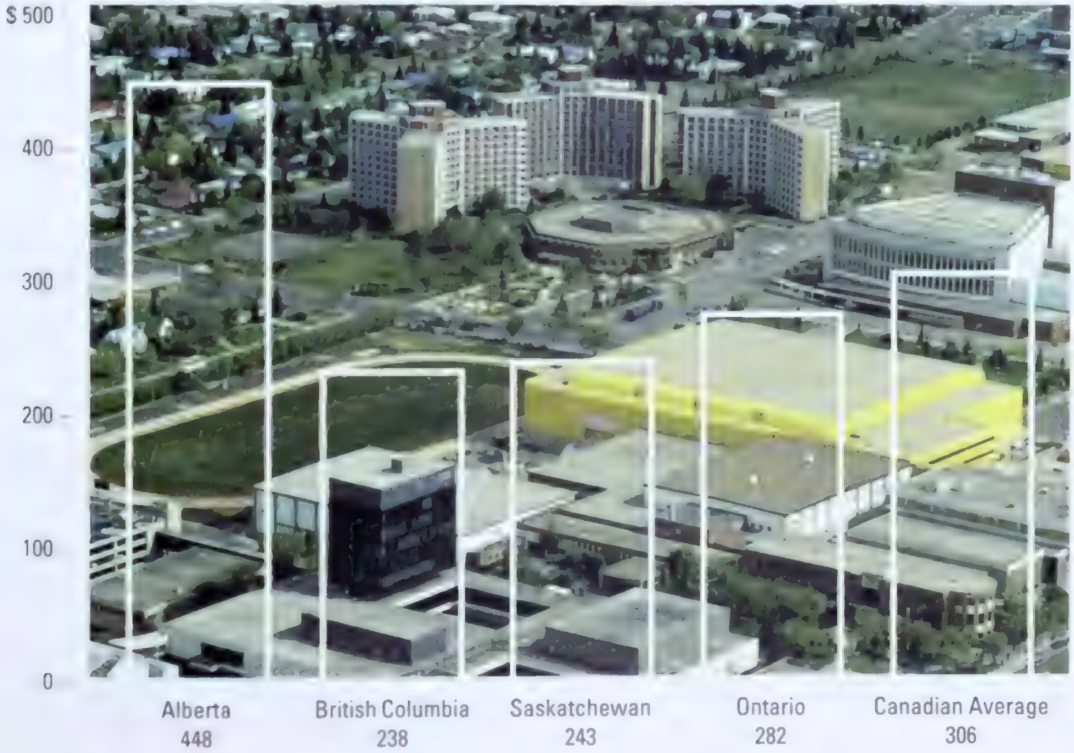
The University of Alberta in Edmonton is the oldest and largest of the province's universities. The University of Calgary, once a separate campus of the University of Alberta, became autonomous in 1966. The University of Lethbridge was added to the system in 1967. These three universities fulfil the traditional roles of teaching, research and public service, and offer a wide range of programs at the undergraduate and graduate levels.

Athabasca University, the newest of the four universities and a recognized North American leader in innovative distance education, was established in 1970 to provide part-time home study opportunities through the medium of long distance teleconferencing. The Banff Centre for Continuing Education, in Canada's Rocky Mountains, offers professional training in the arts, management studies and environmental studies. The centre also houses a variety of national and international conferences and is home to the world renowned Banff Film Festival.

Alberta's 11 public colleges offer two-year university transfer and apprenticeship programs as well as a wide range of further education and community service programs. More than 150,000 people, including approximately 18,000 full-time students, are being served by the public colleges.

**Alberta's Education System**

- Alberta's 33 post-secondary institutions serve more than 644,000 people.
- Distance learning provides all Alberta students with an opportunity for a complete education, regardless of location or circumstance.



PROVINCIAL PER CAPITA POST-SECONDARY EDUCATION SPENDING 1988/89

CHART 2.3

SOURCE: STATISTICS CANADA

*Alberta offers many options for post-secondary education.*

The Southern Alberta Institute of Technology (SAIT) in Calgary, established in 1916, and the Northern Alberta Institute of Technology (NAIT) in Edmonton, established in 1963, offer vocational, business and technology programs, as well as technical training for apprentices. The Westerra Institute of Technology in Stony Plain near Edmonton, is the third and newest of the technical institutes, accepting its first apprenticeship students in 1983-84.

In 1986-87 the three institutes served approximately 78,000 students in credit, non-credit, correspondence and apprenticeship programs. Full-time enrolment for the period was roughly 11,700. In preparing students for careers in industrial services, the technical institutes play a key role in creating and maintaining an adequate supply of well trained manpower in Alberta.

Alberta's four private colleges are each affiliated with a major university and/or accredited by the Private Colleges Accreditation Board. Offerings include university transfer programs and three year undergraduate degrees. In 1986-87, approximately 2,000 students attended the university level programs.

The four Alberta Vocational Centres throughout the province respond to local, regional and provincial needs, and provide a comprehensive range of adult education programs. The major focus is on basic education (grades 1 to 12), skills training and English as a second language (ESL).

To complement this system, about 20 smaller units known as Community Vocational Centres provide training courses and other educational programs to remote and isolated areas of north central Alberta. In 1988, the Community Vocational Centres were amalgamated with the Alberta Vocational Centre at Grouard and the institution has been named Alberta Vocational Centre – Lesser Slave Lake. Total 1986-87 registration in vocational centre programs was more than 20,000 adult Albertans.

The public post-secondary education system assumed responsibility for Alberta's six hospital-based schools of nursing in 1982-83. Four of the schools, all located in Edmonton or Calgary, offer nursing diploma programs as well as refresher programs for nurses wishing to return to the workplace. The remaining two hospitals, at Edmonton and Ponoka, offer psychiatric nursing programs. More than 1,700 people were served by these six schools of nursing in 1986-87.

In order to reach people in areas of the province distant from public post-secondary education facilities, five community consortia were established in 1981-82. Consortia are associations of institutions that work cooperatively with the local community and volunteers to provide post-secondary credit programs, diplomas or certificates. These are awarded by a participating institution or a recognized licensing body. Approximately 2,000 people graduated from these programs in 1986-87.

In addition, Alberta's 85 further education councils, consisting of representatives from various institutions, agencies and volunteer groups, administer non-credit programs within their communities. In 1987 some 319,000 adults participated in about 25,500 courses.

Through the major post-secondary institutions, consortia and further education councils, people living virtually anywhere in the province, have access to educational opportunities.

# TRAINING

Above average economic growth over the past several decades has taught Albertans the value of training – and retraining – for new careers and new opportunities in an increasingly diversified marketplace. Reflecting this trend, for example, Alberta's apprenticeship program is one of the strongest in Canada. Although the province claims less than 10% of the nation's population, roughly 23% of all Canadian apprentices are trained in Alberta.

The Alberta government responds in two ways to the labour market needs of individuals: by offering training programs and related financial assistance for the unemployed, the employed, students, and special needs groups; and by providing career information, counselling and selected placement services.

Training is offered through the Alberta Training Program, the Tailor-Made Training Program, the Alberta Youth Employment and Training Program, the Alberta Vocational Training program, the Apprenticeship training program, Opportunity Corps, and the English as a Second Language (ESL) Secretariat.

The Alberta Training Program provides financial incentives to private sector employers for training and skill development of their employees in order to upgrade the quality of Alberta's workforce. Training must be full-time and take place on-the-job or in the classroom or involve a combination of both.

The Tailor-Made Training Program provides eligible firms with tailor-made assistance in meeting their human resource needs. To be considered eligible, firms must be relocating in Alberta or expanding in the province in areas related to diversification of the province's economy.

The Alberta Youth Employment and Training Program has two elements. The Post-Secondary Internship and Training element provides wage and training subsidies to assist recent post-secondary graduates obtain full time employment related to their field of study or level of education. The Youth Work Experience and Training element provides wage and training subsidies to provide young Albertans with work experience. The program also includes a career counselling component.

The Alberta Vocational Training program has four components. The skill enhancement component addresses the problem of skill updating for unemployed Albertans who are skilled in low demand occupations. The student support component provides financial assistance to help disadvantaged, unskilled individuals obtain academic upgrading and skills training. Program support provides funding for ad hoc short term job-related training programs offered by post-secondary and private vocational schools, while the vocational rehabilitation of disabled persons component provides financial assistance to increase employment opportunities for disabled persons.

The Apprenticeship and Trade Certification program provides on-the-job and institutional training for individuals in 52 trades. The Opportunity Corps program provides financial assistance, counselling, academic upgrading, and work experience and training to Albertans in selected outlying or northern communities. The English as a Second Language Secretariat assumes the lead role in policy, planning and coordination of adult ESL in Alberta.

Career information, counselling and

*Training and apprenticeship programs ensure a skilled workforce.*

**Alberta's Training Programs**

- Alberta's multi-faceted training programs are designed to help Albertans in all parts of the province achieve self-reliance and match their skills to market demand.
- With less than 10% of Canada's population, Alberta trains 23% of Canada's apprentices.
- Training and counselling programs have been devised to meet the needs of individuals experiencing difficulty in entering the workforce.

placement services are offered in a number of ways. Career Development Centres provide career counselling and career resource services to adult Albertans at 16 locations throughout the province. Recognizing women's increasing participation in the labour force, Alberta addresses their training and employment needs through such avenues as the Women's Career Resource Centre and the Career Information Hotline. The Women's Career Resource Centre provides information, consultation and training to career counselling practitioners in an effort to increase women's participation in training and employment programs.

Helping to meet the needs of young people are Youth Employment Centres, which provide a variety of counselling and employment services to young Albertans in both Calgary and Edmonton, and Hire-A-Student, which acts as a job matching agency for students over the summer months. Support for Special Needs Groups provides assistance to six agencies that provide employment counselling and/or placement services to specific individuals; and Settlement Programs coordinates the province's support for immigrant aid organizations.

One measure of success for Alberta's training programs is the total employment picture. With close to 1.2 million Albertans currently in the workforce, employment stands at the highest level in the province's history. In addition, behind the statistics are the thousands of Albertans – longtime residents and newcomers alike – who are gaining a new sense of direction, satisfaction and self-reliance through training and counselling.

*Hospital construction*

# HEALTH CARE

Alberta's health care system is considered among the best in the world. This is due not only to excellent facilities and highly qualified medical personnel, but also to the fact that health care services are both readily accessible and affordable.

Built on the Canadian philosophy of universal accessibility to social programs, the system provides Alberta citizens with basic health and hospitalization coverage under the Alberta Health Care Insurance Plan. For premiums of $23 per month for an individual and $46 per month for a family, Albertans have access to an exceptionally comprehensive range of resources, including the services of a variety of medical and health care practitioners.

Low income Albertans are eligible for subsidized health care rates and all senior citizens and their dependents receive free coverage for a number of health requirements such as hearing aids, eye glasses, dental work and certain medical appliances.

A major thrust of Alberta's health care system is to maintain a healthy labour force. A special department of the Alberta government deals with occupational health and safety, focusing its efforts on the prevention of injury, ill health and genetic damage related to the job or to the work environment.

No matter where they live in the province, Albertans are rarely far from medical help since virtually all communities with populations of 1,000 or more have modern, well equipped hospitals. Alberta has more than 300 hospitals, auxiliary facilities and nursing homes, including approximately 140 active treatment centres. These range from small rural hospitals with less than 20 beds to huge medical complexes such as Edmonton's Walter C. Mackenzie Health Sciences Centre, housing 800 beds, some of the world's most advanced medical equipment, and a wide-ranging medical research program.

### Alberta's Health Care System

- Health care in Alberta is both affordable and accessible, thanks to a government-sponsored universal health care insurance scheme.
- Low income and senior Albertans have free access to a wide range of medical and health care services.
- Alberta has more than 300 hospitals, auxiliary facilities and nursing homes, including approximately 140 modern, well equipped active treatment centres.
- The $300 million Alberta Heritage Fund for Medical Research has established Alberta as a major international centre for medical science.

The centre, which is closely aligned with the University of Alberta, is just one of many medical and health care institutions in Alberta which benefit from the Alberta Heritage Foundation for Medical Research – a unique initiative that has attracted distinguished medical scientists from around the world and established Alberta as an important international focus for medical research.

Health care consumes roughly one quarter of the provincial budget. It is also an important generator of jobs. In all, Alberta's hospitals, nursing homes, medical laboratories, health care practices and other medical services provide employment for 75,000.

For all its success, Alberta's health care system is constantly changing in response to advances in medication and equipment and the introduction of new delivery systems. Recent developments in the latter category include a marked increase in private walk-in clinics, the removal of some services from an institutional setting, the privatization of certain functions such as hospital management, and greater emphasis on preventive health care programs.

*Social services promote independence and self-reliance*

# SOCIAL SERVICES

Despite Alberta's traditional prosperity and exciting economic potential, the province's greatest strength lies in its people. Recognizing that social and economic development are inseparable and that all citizens have a right to dignity and an acceptable quality of life, the Alberta government has developed a social policy designed to offer wide-ranging support when it is needed – and encourage self-reliance and individual and family independence wherever possible.

The private sector also plays a crucial role in Alberta's social support efforts. Since pioneer days, Albertans have been known for their caring attitude toward neighbours and their strong spirit of volunteerism. As well as responding directly to a variety of community needs, many non-profit and charitable groups also work closely with government in delivering publicly funded programs to those in need.

Alberta Social Services is the department of the government responsible for protecting and promoting the social well-being of Albertans. Its programs focus on protecting the safety and legal rights of children and dependent adults, ensuring that basic needs for food, clothing, shelter and care are met, and encouraging a return to individual independence.

Alberta's social allowance program provides financial assistance directly to families and individuals in need and also provides assistance or referrals in finding jobs and receiving various types of support. Services are available through more than 50 offices throughout the province.

The well-being and safety of Alberta's children are safeguarded through a number of programs. The Office of the Children's Guardian acts as sole or joint guardian of children who are subjects of court guardianship orders, monitoring the services the children receive and taking responsibility for decisions regarding adoption and major medical procedures. A child protection program is designed to ensure the survival, security and development of all Alberta children in need of protection; and handicapped children's services help families pay the extra costs of keeping a handicapped child within the family home.

## Alberta's Social Services

- The Alberta government provides a wide range of support services to Albertans in need.
- Services and referrals are available through a province-wide network of offices.
- Alberta's social programs recognize the need to encourage individual and family self-reliance.
- Many volunteer and non-profit groups work in partnership with government to help ensure the social well-being of Albertans.

Alberta's child care program sets and enforces minimum standards in licensed day care facilities and subsidizes day care costs for low income families.

Other programs provide an assured income and a variety of professional services for severely handicapped Albertans, and help the disabled take advantage of training and job opportunities. Programs are also in place to help deal with family violence and family relations problems and to provide shelters for homeless adults. In addition, funding is provided to support a network of women's emergency shelters, offering short-term, supportive environments for abused women and their children and for women in crisis.

These and other social services in Alberta are based on the principles of respect for basic human rights, support of personal responsibility and independence, pre-eminence of the family as the best place for resolving problems, and the importance of prevention and early intervention. In all programs, the Alberta government is accountable to the public for providing quality services to Albertans in need.

*Albertans enjoy a high standard of living.*

**Alberta's Standard of Living**

- Average family and individual incomes in Alberta in 1988 were well above the national average.
- The average per capita income in Alberta in 1988 was $19,947 – $430 more than the Canadian average.

# STANDARD OF LIVING

Alberta is one of the most dynamic of Canada's 10 provinces in terms of economic growth and cultural diversity. The quality of life enjoyed – and the sophistication of the province – comes as a welcome surprise to visitors and newcomers.

Some of the major economic indicators of Alberta's quality of life include personal income, consumer spending, the inflation rate, housing infrastructure, and the tax regime.

## PERSONAL INCOME

Personal income is one of the many factors that contribute to the standard of living in Alberta. The average per capita income in Alberta in 1988 was $19,947 – $430 more than the Canadian average of $19,517.

Alberta's per capita personal disposable income is also above the Canadian average. In basic terms, personal disposable income measures the amount of current income that households have to spend and save, and is made up of total personal income less personal income taxes.

Since 1977, total personal income in Alberta has increased substantially, reaching more than $47 billion in 1988. The largest and most important component of personal income has been labour income (wages and salaries), which accounted for over 61% of the 1988 total. Wages and salaries in service industries accounted for the highest portion of this income.

# CONSUMER SPENDING

Another measure of prosperity or affluence as well as a reflection of changing emphasis in buying habits is retail trade figures.

Consumer perceptions regarding the general health of the economy, as well as interest rates and the need for product replacement, have a particular bearing on consumer purchasing decisions for more costly durable items such as automobiles and household appliances. In 1988, Alberta retail sales per capita at $6,661 were among the highest in the country. Almost 70% of consumer expenditures were for housing, transportation, and food.

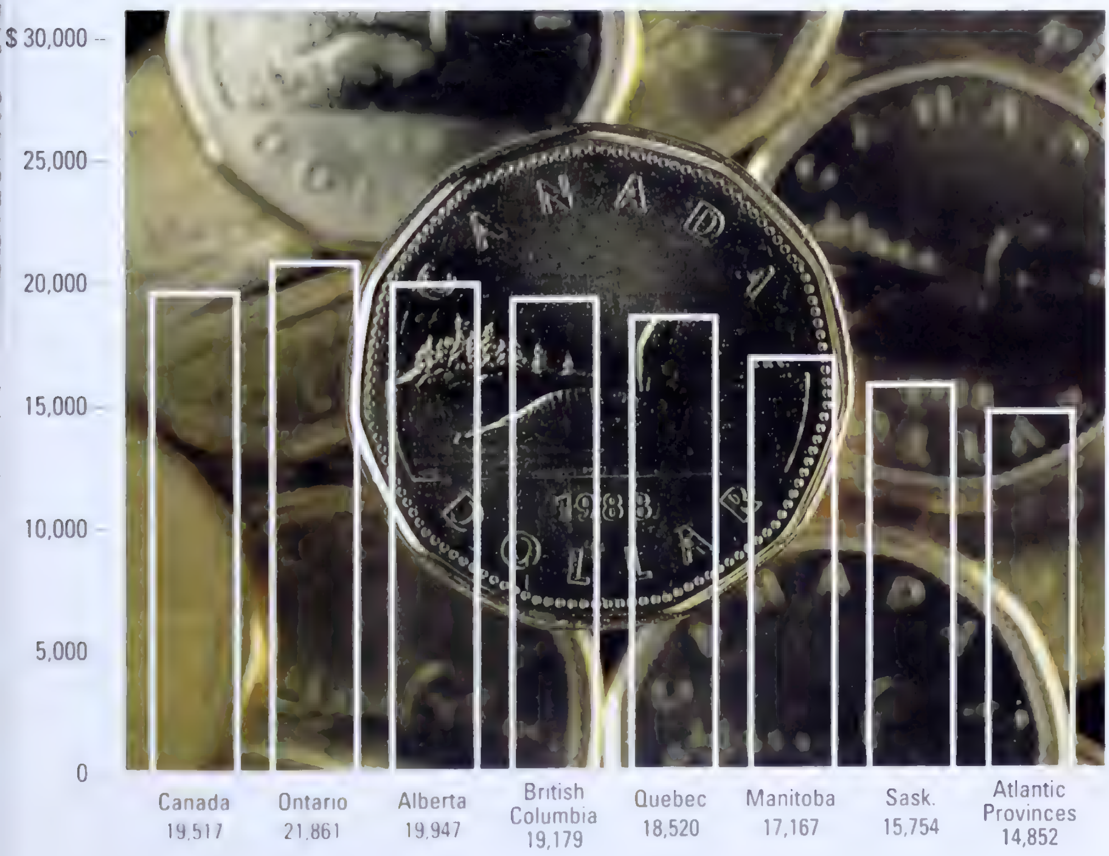
Spending on services, the second largest component of consumer expenditures, has also shown strong growth, reflecting the increasing demand for recreational and leisure activities.

The steady growth in personal income, combined with Alberta's low tax rates, are major factors contributing to the high level of retail trade and expenditures on services. Growth in the tourism industry has further benefited consumer spending in the province.

Alberta's growing economy and high level of consumer confidence has given rise to an extremely active and competitive retail trade industry.

**Alberta's Standard of Living**

- Alberta has a good choice of affordable housing and a number of government programs encourage home ownership.
- Alberta has an attractive tax environment with personal and corporate tax rates that are among the lowest in Canada.
- Alberta is the only Canadian province without a retail sales tax and its gasoline tax is the lowest in Canada.

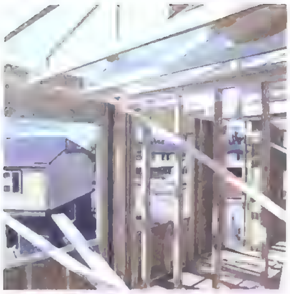


PER CAPITA PERSONAL INCOME BY PROVINCE, 1988

CHART 2.4

SOURCE: STATISTICS CANADA

## CONSUMER PRICE INDEX


*Affordable housing is available throughout Alberta*

The impact of inflation on costs and prices has, to a certain degree, clouded the perception of real growth in retail sales. The consumer price index (CPI) is used to measure changes in the typical household's "cost of living" or the rate of inflation. The consequences of such changes are primarily associated with changes in what is called the "purchasing power of money."

In recent years, Alberta's annual rate of inflation has been well below the national average. In Alberta's two major cities, Edmonton and Calgary, CPIs increased by 2.7% between 1987 and 1988. This consumer price change, or inflation rate, was among the lowest in Canada.

## HOUSING

Alberta offers housing choices to suit all consumer tastes and needs. While major centres in the province offer housing comparable to that available in prestigious areas elsewhere in Canada, low and middle income Albertans can also expect to find a good choice of attractive, affordable housing. Housing costs in Alberta cities are substantially lower than in other major Canadian centres.

The Government of Alberta offers a number of programs designed to increase housing accessibility, including the recently announced Alberta Family First Home Program, the Mortgage Interest Shielding Program and the Rural Home Assistance Program.

The residential construction industry in Alberta is recognized for developing innovative design and construction techniques suited to the province's climatic conditions.

## ALBERTA'S TAX STRUCTURE

With personal income tax rates and corporate tax rates among the lowest in Canada, Alberta is the only Canadian province which does not have a retail sales tax. There is no payroll tax in Alberta, and gasoline taxes are the lowest in Canada. In addition, the Alberta government contributes a significant amount to funding education and reducing municipal and property taxes.

Alberta's corporate tax system is designed to encourage investment, with a general corporate tax rate of 15% for large corporations and a tax rate of 6% for small business. ■

*Calgary Tower from the Saddledome*

# 3 THE ALBERTA ECONOMY

Alberta's land and economy are characterized by diversity

Alberta's economy has historically been built upon the development of key natural resources: furs, agricultural land, and minerals.

Fur trading was the major economic activity in the Alberta region prior to the 1870s. Since then, Alberta's economic evolution has been of two parts, dated accidentally, but neatly, as pre- and post-Second World War. In the late 1800s and early 1900s, new settlers devoted most of their efforts to developing an agricultural industry in Alberta. Influenced by both fluctuating market prices and uncertain weather conditions, the province's agriculture-based economy in the early 1900s alternated between buoyant prosperity and economic struggles.

In the more recent period, discovery of oil at Leduc in 1947 ushered in the modern age of the petroleum industry in Alberta, and with it, the development and growth of exploration and production as a viable industry. Since that time, economic growth in Alberta has been largely investment-led through projects that have built upon the province's natural resource strengths.

Since the 1970s, income from Alberta's natural resources has been used to further stimulate economic diversification. This, coupled with stability of market demand, has created broader based economic development in Alberta marked by a wide range of new manufactured products, growth of advanced technology industries and rapid expansion of commercial and ırban services.

### Alberta's Economy

- Alberta has successfully used its traditional strengths in agriculture and energy as a springboard for growth and diversification.
- Alberta's total GDP in 1988 was approximately $63 billion, representing per capita annual output of $26,222 – 13% higher than the national average.

## ALBERTA KEY ECONOMIC INDICATORS-1988

| | |
|---|---|
| Gross Domestic Product | $62.8 Billion |
| Investment | $19.4 Billion |
| Manufacturing Shipments | $17.9 Billion |
| Retail Sales | $16.0 Billion |
| Exports | $14.1 Billion |
| Value of Energy Production | $14.6 Billion |
| Population | 2.4 Million |
| Employment | 1.2 Million |

SOURCE: STATISTICS CANADA

# THE ALBERTA ECONOMY TODAY

- In recent years Alberta has consistently attracted Canada's highest per capita level of investment.
- Alberta exported $14 billion worth of goods and services to world markets in 1988.

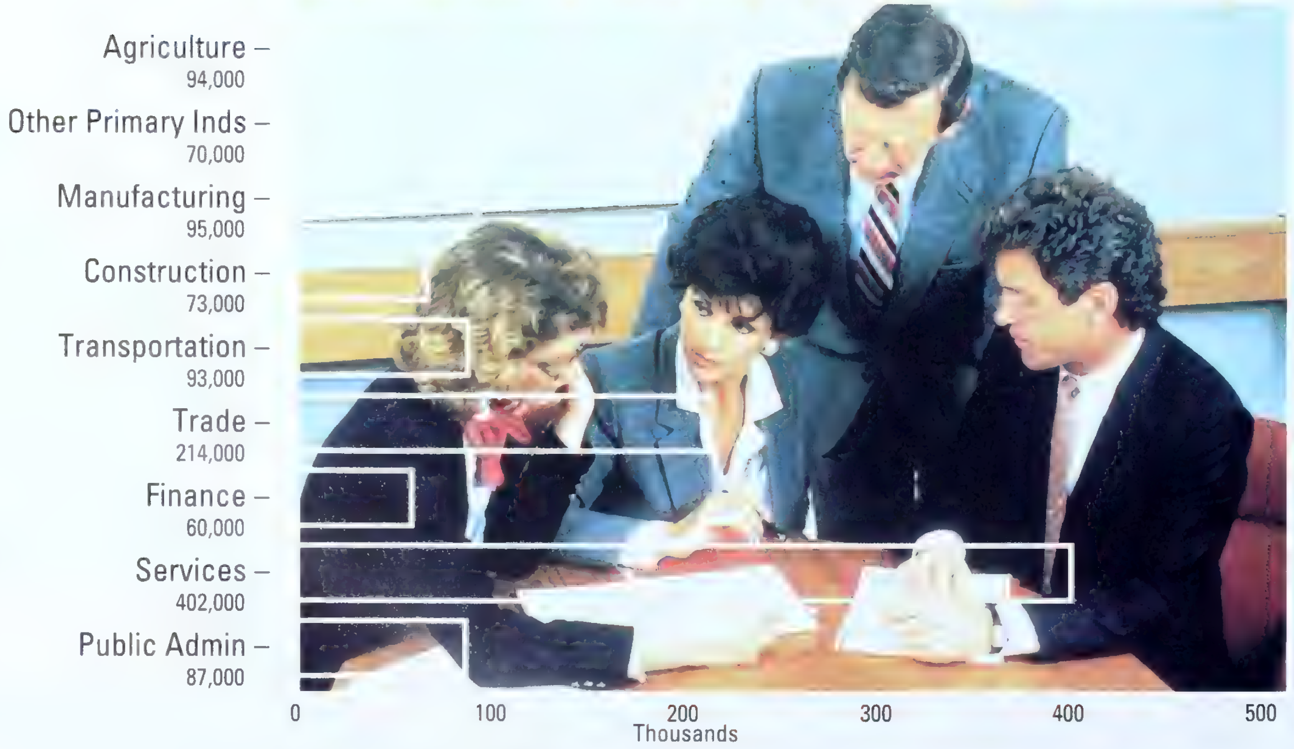
Rich in agricultural land, forests, energy resources, and scenic diversity, Alberta has become a major economic and industrial force in the Canadian economy.

In real terms, the size of the Alberta economy has more than doubled since 1971. The province's total Gross Domestic Product (GDP) in 1988 amounted to nearly $63 billion, representing per capita annual output of $26,222, 13% higher than the national average.

Alberta's resource-based industries, particularly energy and agriculture, have played an important role in the growth and development of the province, creating countless spin-off benefits in terms of new products, technologies and services. Over the years, Alberta has experienced remarkable growth in a wide range of new manufacturing and service industries such as petrochemicals, forest products, food processing, electronics, computer and business services, and tourism. Today, Alberta's manufacturing and service industries account for approximately 70% of Alberta's GDP.

Many enterprises, not viable in the past because of lack of related and complementary firms, are successful today because of the industrial development which has taken place in other fields. Future growth prospects are even more promising as Alberta becomes capable of competing at all levels in the international marketplace.

ALBERTA EMPLOYMENT BY INDUSTRY 1988 CHART 3.1



SOURCE: STATISTICS CANADA

# DIVERSIFICATION

## ENERGY

Well known for its strengths in energy resources, Alberta has 82% of Canada's conventional crude oil and equivalent reserves, 85% of the country's natural gas reserves and almost all its bitumen and oil sands reserves. Synthetic crude is produced from oil sands in northeastern Alberta, where deposits cover an area the size of the Canadian province of New Brunswick and contain more oil than Saudi Arabia.

Overall, Alberta accounts for about 40% of the value of Canada's mineral production. While most of this output is closely related to the province's reserves of natural gas and oil, Alberta also has extensive deposits of coal as well as other mineral resources. Coal mining has become increasingly important, with annual coal production more than doubling over the past decade. The province's vast reserves of thermal coal are used in electric power generation and the metallurgical coal is exported for use in coking and steel production.

This abundance of energy resources is a central and major advantage to Alberta and the industry has made a significant contribution to the diversification of the province's economy. Petroleum refining, petrochemicals, and plastics processing have grown rapidly in importance and, in the process, have laid the foundation for future developments. Alberta is a leader in exploration and production technology, its products and services now exported around the world. Moreover, Alberta is already a world leader in oil sands development.

Over the past 40 years, demands from the energy industry have also acted as a catalyst for growth in electronics, telecommunications, advanced materials and computer services. Equally important, revenues from resource development have been used to create a superb environment for business.

These developments, coupled with the magnitude of the resource, give Alberta a solid basis for economic growth and a natural focus for future technological effort.

## AGRICULTURE

Agriculture is another key industry in Alberta, accounting for 20% of Canada's agricultural output. More than 12 million hectares (32 million acres) of land are currently under cultivation in Alberta. A further 8.5 million hectares (21 million acres) of uncultivated land are used as pasture and forage for livestock. While wheat remains the primary crop (5.3 million tonnes were produced in 1988), the production of new crops and new varieties of existing crops continues to expand as the agricultural industry diversifies. Significant investment in irrigation facilities has transformed nearly 466,000 hectares (1.2 million acres) of dryland in southern Alberta into productive agricultural land. This represents approximately two thirds of the total irrigated land in Canada.

The agriculture industry exported more than $2.4 billion worth of goods in 1988. Grain and grain products are sold throughout the world while livestock and processed food products appear in markets across North America, Europe, Pacific Rim countries and other parts of Asia.

Livestock production has created a stable local market for feed grain producers while providing the basis for a large meat processing industry in the

*Alberta Wheat Pool grain elevators*

### Alberta's Economy

- Manufacturing and service industries, including transportation, utilities, finance and public administration account for approximately 70% of Alberta's GDP.
- Alberta has experienced remarkable growth in recent years in industries such as petrochemicals, forest products, electronics, computer and business services and tourism.
- Alberta's 1988 manufacturing shipments were valued at $17.9 billion.
- Alberta's service industries have been one of the fastest growing sectors of the Alberta economy over the past decade.

province. Food and beverage processing is now the largest manufacturing industry in Alberta, accounting for nearly 25% of the province's total manufacturing shipments. Opportunities continue to emerge in the agri-business and food processing industries to meet changing consumer demand and supply growing international markets.

## FORESTRY

Covering some 360,000 square kilometres, the province's forests constitute the largest remaining timber resource in North America. Alberta is now beginning to develop the tremendous potential of this resource. Annual shipments in the forest products industry are currently $1.5 billion and the industry employs more than 12,000 people.

Of particular importance is the impact that technological developments are having on the structure of the Alberta forest industries. While lumber, pulp and plywood will continue to be the mainstay of timber harvesting, new products such as oriented strandboard and medium density fibreboard are now being produced, diversifying the market potential for Alberta's forest resources.

The forest products industry, which has become one of Alberta's success stories, will alone account for more than $3.5 billion worth of new investment over the next few years. Investment of this magnitude will have significant spin-off benefits for major urban centres, which will act as manufacturing and service centres for much of the forest industry. Roughly 5,000 new direct operating jobs and thousands of new construction jobs will be created – all in northern Alberta.

## TOURISM

Alberta's mountain scenery, national and provincial parks, and numerous other attractions have made tourism a focal point for future economic growth in Alberta. Revenues in this industry have more than tripled since 1975. In 1988, this sector supported the equivalent of 75,000 full-time jobs and generated revenues of $2.3 billion.

Alberta's many scenic and historical attractions, its facilities, and its solid reputation for hosting world class events such as the Winter Olympics in Calgary, give tourism exceptional long-term potential for generating additional revenues and employment opportunities for Albertans.

## MANUFACTURING

Substantial progress has been achieved in diversifying the types of manufactured goods produced in the province and in capturing a greater share of domestic and international markets. The manufacturing sector plays an increasingly important role in the development and growth of the Alberta economy.

In 1988, the value of manufacturing shipments reached $17.9 billion, led by sales in food processing, chemical and chemical products, forest products, and metal and machinery products.

Other manufacturing industries, such as plastics, electronics, telecommunications, transportation equipment, clothing and fashionwear, and consumer products are also becoming increasingly important to Alberta's dynamic economy.

*Fly-in Fishing, Grist Lake*

### Alberta's Economy

- Small businesses (annual sales under $2 million) are a cornerstone of the Alberta economy, accounting for 97% of all businesses in the province.
- The $12.4 billion Alberta Heritage Savings Trust Fund, which uses non-renewable resource revenues for the benefit of present and future Albertans, is a key tool in the province's financial management strategy.

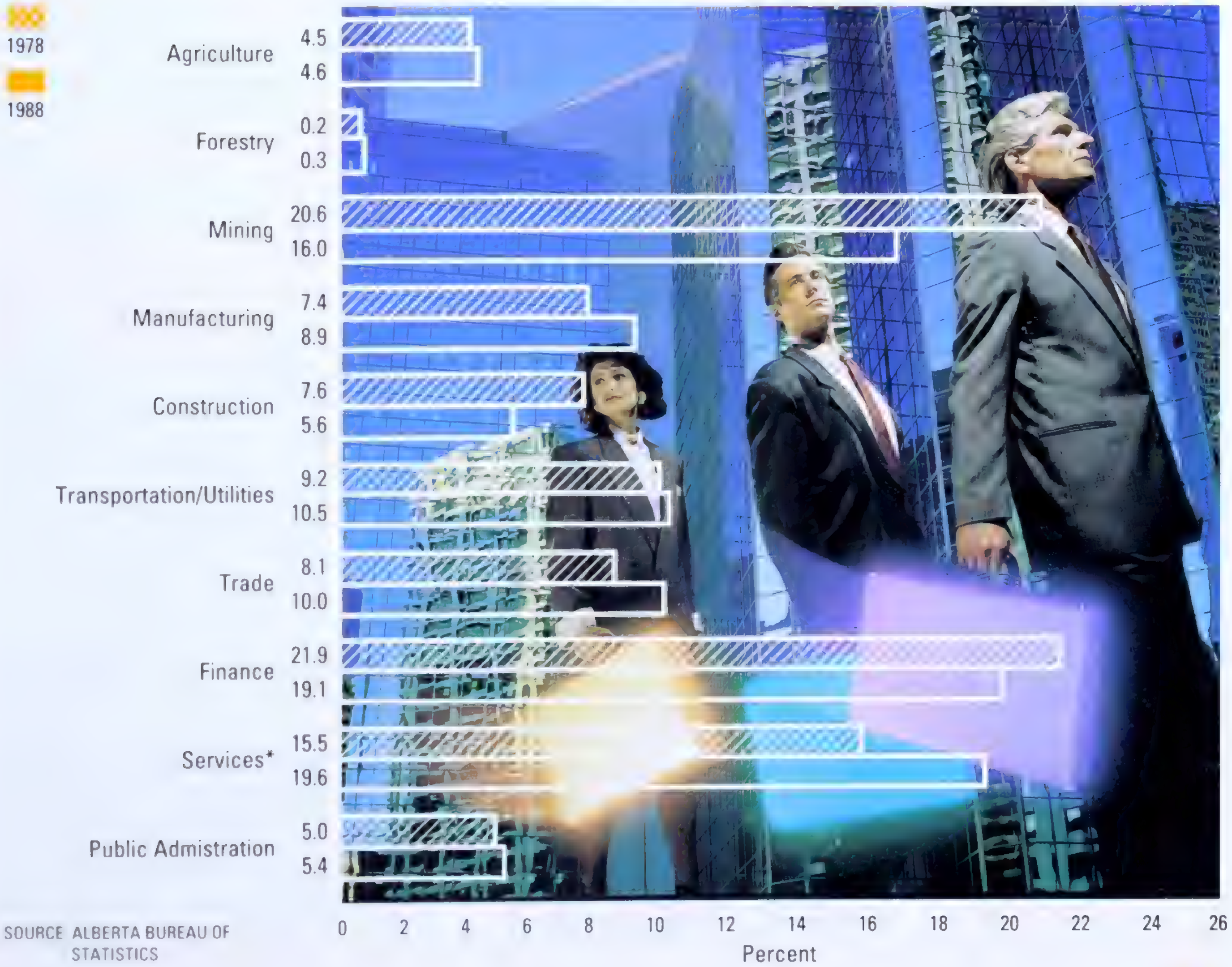
# ADVANCED TECHNOLOGIES

The past decade has seen impressive developments in advanced technology in Alberta in terms of growth in the number of firms, expanded areas of research and product development, and further penetration of international markets.

Development of the advanced technology industries is one of the key initiatives within Alberta's economic diversification strategy. In order to help strengthen this sector, the province has given new impetus to the commercialization of technology.

Efforts focus on areas where the industry has both a competitive edge and long-range potential. These include medical research, biotechnology, advanced materials, electronics, telecommunications and computer services. Alberta companies have already developed strengths in telecommunications, instrumentation and process control systems. Other areas with growth potential include: aerospace products, pharmaceuticals and medical products, cold region technology adaptations, and spin-offs related to new technologies and additional developments in oil sands extraction and processing.

## PERCENTAGE DISTRIBUTION OF ALBERTA GDP BY INDUSTRY 1978 & 1988 CHART 3.2



SOURCE ALBERTA BUREAU OF STATISTICS

*Includes business, personal and community services

## SERVICES

*Government initiatives encourage entrepreneurship*

The service industries have constituted the most dynamic sector of the economy over the last decade, making a significant contribution to employment and output in Alberta and Canada. These industries include transportation services; business services such as computer software and engineering, scientific and technical services; wholesale and retail trade; financial services, community and personal services, tourism and public administration.

The service sector continues to contribute toward the increased efficiency and competitiveness of Alberta's manufacturing and resource industries by improving planning and design, product development, transportation, marketing, and distribution. It should also be noted that trade in services is becoming an important aspect of the Alberta economy. These so-called invisible exports amounted to an estimated $800 million in 1988 and represent an area of significant growth potential.

# IMPORTANCE OF TRADE

Alberta is a trading province, its industries vitally dependent on access to international markets. In 1988, Alberta business exported more than $14 billion worth of goods and services to world markets. This accounts for approximately 22% of Alberta's total output (GDP). Alberta companies export to more than 140 countries around the world.

The development of new international markets has helped speed diversification of the Alberta economy. This diversity is apparent in the increasing proportion of secondary products being exported, most notably petrochemicals, forest products, processed foods, electronics, and telecommunications equipment. At the same time, exports of primary products and commodities remain strong.

A new chapter in the province's trading history opened in 1989 as Alberta companies began to seize opportunities created by the Canada/United States Free Trade Agreement. Through the agreement, tariff and non- tariff barriers to trade are being eliminated or reduced – some immediately and some over the next 10 years – creating a more dynamic marketplace. With expanded and more secure access to the United States market of 244 million consumers, Alberta business is setting strategies in motion to expand, specialize or diversify operations.

While the United States is Alberta's largest trading partner, accounting for 69% of all exports in 1988, the province's business community is not losing sight of other promising markets. Stronger trade ties are being developed with countries in other geographic sectors. Indeed, Asia and the Pacific Rim are the province's fastest growing markets, and Alberta companies now sell a large percentage of their manufactured goods to customers in this region. In 1988, the Asia Pacific Region accounted for nearly 20% of Alberta's exports. Sales to Europe represented 5%, while markets in Latin America, Africa, and the Middle East together totalled 6%.

Building on a worldwide reputation as reliable and sophisticated trade partners, Albertans have approached export development with imagination and innovation.

# THE ROLE OF SMALL BUSINESS

Although big business and international trade are essential to Alberta's economic growth, the small business community has become one of the cornerstones in Alberta's economic development strategy.

The small business community, defined as firms earning $2 million or less in annual sales, has created 75% to 80% of the new jobs in Alberta over the last six to eight years. These firms are also recognized as major innovators, accounting for up to 80% of all the innovations made by the business community.

Of special significance is the fact that the number of small businesses in Alberta continues to increase. Over the past several years, the number of Alberta firms with less than 20 employees increased by more than 57%. In 1988, Alberta recorded an average of 1,235 business incorporations per month, compared to an average of only 80 bankruptcies per month.

Because of the enormous impact of small business on Alberta's economy, government has developed several initiatives to encourage ongoing local entrepreneurial activity. These include management advice, organizational support and various financial assistance programs.

Among financial and management programs and services developed to encourage entrepreneurship are: the Alberta Opportunity Company, the Management Assistance Program; and the Export Trade Readiness for Alberta Program. These and other support programs are supplemented by counselling services from regional government offices located throughout Alberta.

*Small businesses lead in job creation*

# INVESTMENT ACTIVITY

Investment activity is one of the key indicators of growth in an economy. More important, it is an indicator of investor confidence in the security, profitability and prospects of an industry in a given locale. Over the years, investment has provided a major stimulus to Alberta's economic performance.

In 1971, total private and public investment (capital and repair) in Alberta was estimated at $2.7 billion with a per capita investment of about $1,670. By 1988, volume of investment had risen to $19.4 billion or $8,095 per capita investment. Even after discounting for inflation, this represents a phenomenal rate of growth. While the peak in annual investment reached in 1981 has not been matched since, over the past 10 years Alberta has consistently recorded Canada's highest per capita level of investment.

Despite current uncertainty over crude oil and natural gas prices, Alberta continues to be the most attractive area in North America for investment by the petroleum industry. In addition to ongoing investment in the conventional oil and gas industry, construction is underway on the $1.4 billion Husky Oil Upgrader. Planning and detailed engineering design is also continuing on the $4.1 billion OSLO oil sands development.

While the energy and agriculture sectors will continue to be the cornerstone of the Alberta economy, much of the province's new growth will be broader based, spread across a number of industries including forestry, petrochemicals, advanced technologies, tourism, and other service industries.

In recent years, new capital investment projects outside the energy and agriculture industries have made a major contribution to the Alberta economy.

Manufacturing output is increasing steadily in terms of both growth and diversity, and a strong base has been laid for future expansion and evolution. Major new capital expenditures are currently under way or planned in pulp and paper, petrochemicals, food processing, and primary metal industries. Together, the estimated value of these projects is over $6 billion.

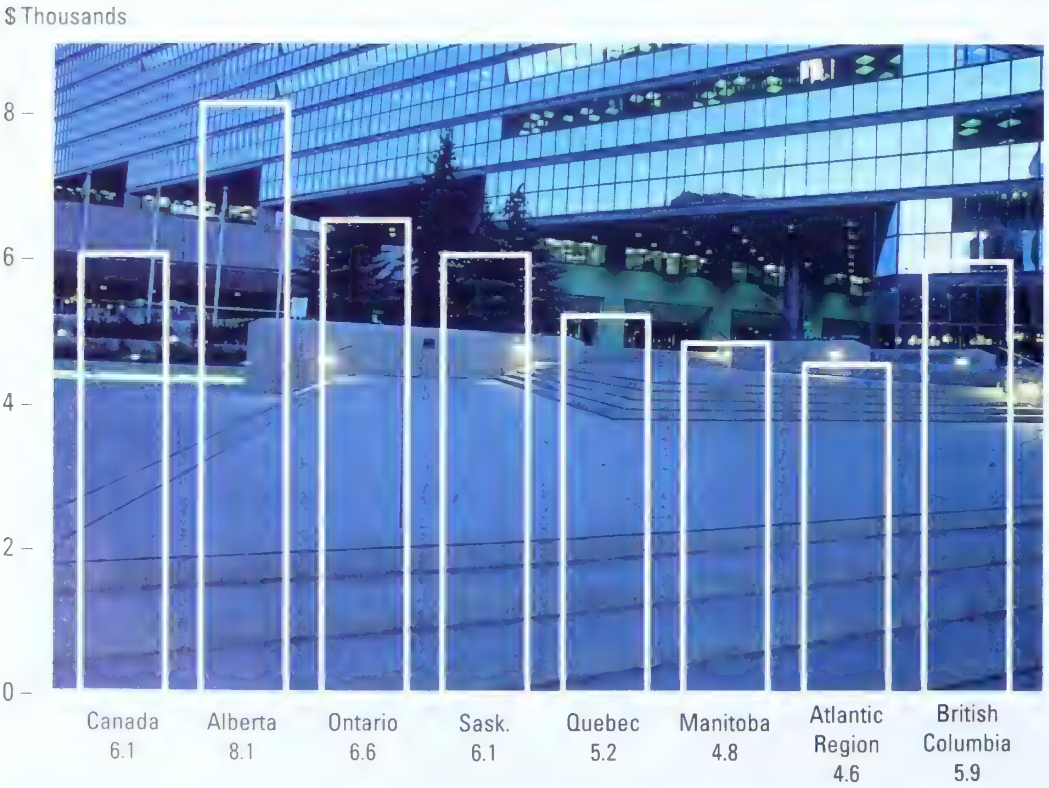
In addition, investment in areas such as aerospace, pharmaceuticals, biotechnology, advanced materials, and cold region technology has increased significantly over the past few years.

The need for physical infrastructure, stimulated by public and private investment, has also kept Alberta's construction sector very active. Alberta currently ranks highest among Canadian provinces in per capita volume of construction.

The rise in investment spending in the province over the last few years clearly indicates that Alberta is viewed as one of the most attractive investment sites in Canada. As a result, Alberta is now entering a period of stronger and more diversified economic growth, while at the same time, the multiplier effects of Alberta investment continue to benefit and stimulate Western and Central Canada.

PER CAPITA PRIVATE AND PUBLIC INVESTMENT BY PROVINCE 1988

CHART [illegible]



SOURCE: STATISTICS CANADA

# HUMAN RESOURCES

With over half of all Albertans under 30 years of age, and the majority between 25 and 44, the province has one of the world's youngest populations. This is due in part to the high level of international and interprovincial migration to Alberta. Many new citizens, drawn from around the world by opportunities within the province, contribute to Alberta's multicultural diversity.

Albertans are among the best educated people in North America. The Alberta government, recognizing that an educated population is essential to a technologically-oriented society, invests more per capita in education and career development than any other Canadian province. With less than 10% of Canada's population, Alberta has more than 20% of the nation's apprentices, and almost 30% of the population holds post-secondary degrees, diplomas or certificates. This workforce offers many advantages to the business community.

- Per capita productivity is the highest in Canada. As measured by GDP, this was $26,222 in 1988 – 13% higher than the national average.
- The province has Canada's highest labour force participation rate. Of every 1,000 working-age Albertans, 724 were in the labour force in 1988, compared to the national average of 667.
- Alberta consistently has one of the best labour records of any province in Canada in terms of lost workdays due to strikes.

*The well-being of Alberta's children is safeguarded by legislation and social programs*

# ALBERTA'S ECONOMIC STRATEGY

Investment, whether national or foreign, is welcomed in Alberta. Large capital infusions are usually accompanied by the managerial and technical expertise needed to ensure they are used efficiently, effectively and profitably – and, in the process, a generation of native talent is trained.

Alberta sees the role of government as one of providing support to, but following the lead of, the private sector. This role serves Alberta well in a rapidly changing and competitive world, where decisions taken by individual entrepreneurs ultimately select the "winners and losers". Once business has established the direction, government policy can support and enhance its competitiveness and encourage further development

Within this context, the Alberta government's primary goal is to facilitate the development of a stable, diversified economy.

The Government of Alberta has established policies that build on Alberta's strengths, remove impediments and overcome constraints, sustain a stable investment climate, and recognize the vital role of the private sector, thus encouraging diversification and growth. Several of the more important elements of Alberta's economic policy include:

- Establishing the Alberta Heritage Savings Trust Fund, which has provided the financial means to undertake initiatives to further enhance Alberta's attractiveness as a place to invest.

*Kananaskis Golf Course*

- Maintaining a competitive tax regime for the province's business community, with current tax rates on small business and personal income being among the lowest in Canada.
- Establishing an extensive infrastructure in transportation, communications, education and health care – all of which are essential to economic growth and diversification.
- Developing world class facilities in science and technology such as the Electronics Test Centre, the Alberta Microelectronic Centre, the Alberta Research Council, and the Alberta Heritage Foundation for Medical Research.
- Developing world class facilities for tourism including heritage attractions such as the Tyrrell Museum of Palaeontology and the Head-Smashed-In Buffalo Jump World Heritage Site, and recreational features such as Kananaskis Park and the Winter Olympics sites.
- Providing assistance to small businesses where the marketplace has not responded to their needs. Examples include the Alberta Small Business Interest Shielding and Alberta Capital Loan Guarantee Program, the Alberta Opportunity Company, and the Alberta Agricultural Development Corporation.
- Encouraging the formation of venture capital pools as sources of equity capital and liquidity for Alberta businesses. For example, the establishment of Vencap Equities Ltd. It should also be noted that the Alberta Opportunity Company is now able to make equity investments in certain cases where companies are involved in manufacturing, tourism, or advanced technology.
- Promoting the development of export markets for Alberta goods and services through programs such as the Market Development Assistance Program, the Export Loan Guarantee Program and the Export Trade Readiness for Alberta.

While resources will always play an important role in the Alberta economy, the initiatives undertaken by the Alberta government will continue to broaden the province's economic base and lessen dependence on the sale of unprocessed commodities, both renewable and non-renewable.

## ALBERTA HERITAGE SAVINGS TRUST FUND

With financial assets of approximately $12.4 billion at March 31, 1989, the Alberta Heritage Savings Trust Fund continues to have a profound impact on both the economic life and social well-being of Alberta.

Created in 1976 with passage of the Alberta Heritage Savings Trust Fund Act, the fund has allowed the province to undertake projects of significant social benefit, helped maintain low taxes and reduce budgetary deficits, and enabled the province to take advantage of the opportunities for economic diversification and growth.

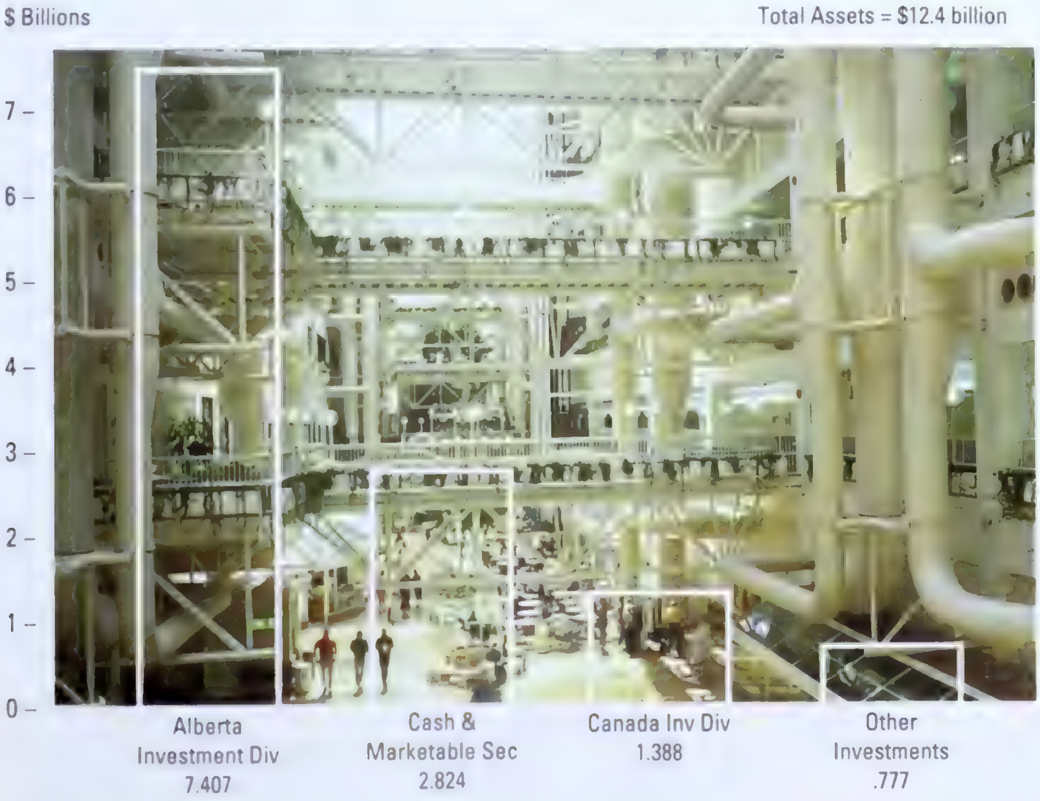
In deciding to save a portion of provincial non-renewable resource revenues in a Heritage Fund, the Alberta government recognized that the province's conventional oil and gas resources would be depleted over time and that a portion of the revenues they generated should be used to benefit future as well as present generations of Albertans.

The Heritage Fund has helped support the strength of our economic recovery. Income from the Heritage Fund helps the government to provide superior services and programs in education, environment, health and other areas. In 1988-89, $1.25 billion of Heritage Fund income was transferred to the province's general budgetary account, increasing total revenues by 14 per cent. Over $9.6 billion has been provided by the Fund since 1982.

The government's commitment is to build upon our resource advantages in agriculture and energy by increased processing of our raw materials in Alberta. In 1988-89, the Heritage Fund made investments that assisted in the government's diversification efforts in forestry, petrochemicals, agribusiness, heavy oil upgrading, high technology, and tourism. By encouraging the development of secondary industries, the Heritage Fund helps provide quality jobs and protects our economy from swings in commodity prices.

Financial assets of the Heritage Fund are declining modestly by investments made under the Capital Projects Division. These investments enhance the quality of life in Alberta and provide long-term economic and social benefits to the people of Alberta. Capital Projects Division expenditures of $155 million in 1988-89 included the development of irrigation projects in southern Alberta, the provision of individual telephone line service for rural Albertans, municipal recreation facilities and research in agriculture, oil sands development and cancer treatment.

Authority to make investments is vested in the legislature, the Heritage Savings Trust Fund Investment Committee (the provincial cabinet), or the provincial treasurer, depending on the nature of the investment. The Heritage Fund is held and administered by the provincial treasurer.



COMPOSITION OF ALBERTA HERITAGE TRUST FUND FINANCIAL ASSETS 1989

CHART [illegible]

SOURCE: ALBERTA HERITAGE SAVINGS TRUST FUND ANNUAL REPORT, 1988/89

# 4 RESOURCE INDUSTRIES

*Alberta's traditional agricultural sector has developed into a world class industry*

The Alberta economy has traditionally drawn its strength from a rich and varied base of natural resources – productive soil; vast oil, gas and coal deposits; substantial forests; as well as a variety of non-fuel minerals.

While the province's natural resource wealth is impressive, the Alberta government recognizes it is not inexhaustible. Resource development is carefully managed and regulated to ensure efficient use of the resources and protection of the environment

# AGRICULTURE

Long a mainstay of the provincial economy, agriculture has become one of Alberta's most flexible and innovative industries, quickly responding to the challenges of a dynamic global marketplace. Alberta farms and ranches now produce roughly one fifth of Canada's agricultural output.

The more than 12 million hectares of land under cultivation in Alberta include some of Canada's most northerly farms (in the Peace River region and beyond) – and the country's greatest concentration of irrigated farmland, some 466,000 hectares (1.2 million acres) in the semi-arid south. Agricultural experts have concluded that an additional 3.6 million hectares (9 million acres) of Alberta land could be made productive with modern technology and farming practices.

As the agriculture industry continues to mature in Alberta, the number of small farms has declined. Larger, fully integrated, highly specialized operations are able to make better use of capital inputs, lowering costs per unit of production and improving Alberta's competitive ability in national and international markets.

This trend is reflected in farm numbers, which declined by nearly 8% from 1971 to 1986, during a period when both total farm land and the number of larger farms in Alberta have increased. In 1986, average farm size was 883 acres. This compares to an average farm size in 1966 of only 706 acres. In 1966, less than 400 acres per farm consisted of improved land while by 1986, improved land made up 550 acres per farm. The result has been a 27% increase in land seeded to crops and a 33% increase in improved pastureland

Also contributing to the increase in cropland is the 29% decrease in summerfallow acreage (land kept out of crop for a growing season) over the same period. Summerfallowing, still a common practice in dry southern regions, is now less common in more humid parts of the province. At the same time, conservation tillage has increased. For example, a 1987 survey of producers revealed that only 53% of Alberta producers are still using conventional tillage methods, 27% use reduced tillage, and 17% use minimum tillage techniques. Alberta farmers are not only aware of soil erosion, but many are working to minimize this potential threat to the province's cropland

**Alberta Agriculture**

- Farm cash receipts in Alberta in 1988 were more than $4.4 billion.
- Alberta's secondary agricultural processors produced $4.6 billion worth of food and beverage products in 1988.
- Alberta's agriculture industry exported $2.4 billion worth of products in 1988.
- Alberta shipped $170 million worth of processed canola products to international markets in 1988.
- Alberta produced 10% of the pork, 44% of the beef and 39% of the lamb and mutton inspected in Canadian slaughterhouses in 1988.

*Alberta beef is enjoyed around the world*

Approximately 40% of Alberta cropland is annually seeded to wheat – a practice that resulted in production of some 5.3 million tonnes in 1988. Barley, tame hay, canola and oats, respectively, were the next most prominent crops. Less common but also important, are flaxseed and rye.

In recent years, surplus stocks of conventional crops have caused producers to look to high-demand special crops. Production of these crops has soared since the 1986-88 price declines for conventional crops. Field peas (edible peas grown for use as a protein supplement or for seed) are the most popular special crop in Alberta. Producers seeded an estimated 130,000 acres of field peas in 1988 – twice the acreage sown to field peas the previous year and nine times the amount seeded in 1986. Success of this crop is due in part to its shorter season and the fact that it requires less heat than many other special crops and can therefore be grown further north.

Expansion of Alberta processing facilities for dry beans has contributed to a doubling of the acreage seeded to this special crop in recent years. More than 20,000 acres (8,094 hectares) are now grown, mainly in southern Alberta.

Acreage of lentils has also increased, with more than 30,000 acres in production in 1987. Because this trend occurred across the country, the export market was flooded, causing prices to plunge and prompting Alberta producers to curtail production in 1988. However, market adjustments could see lentil production in Alberta increase in future.

Triticale (a cereal grain developed from wheat and rye), mustard, sugar beets, canary seed, potatoes, forage crops for seed, all types of corn, sunflowers, buckwheat, favabeans and safflower are also produced in Alberta and continue to play a significant role in the farming economy.

Caraway and coriander, special crops which are relatively new to Alberta, each recorded 500 acres of production in 1987 and about a thousand acres in 1988. Both crops show good potential for future growth. Alberta also has a small but profitable and expanding vegetable industry, with annual production now valued at about $31 million.

Alberta's agriculture industry has continued to expand its processing capabilities, enabling it to competitively export value-added products both nationally and internationally.

Processed dehydrated alfalfa has climbed continually in export value for most of the last decade. In 1988, $33 million worth of alfalfa was exported to national and international markets. Japan is the most important international market for this product.

Japan's primary import from Alberta is unprocessed canola. In 1988, it imported $206 million – 89% of all canola exported internationally from Alberta. Mexico was the second largest customer, importing 9% of Alberta's canola exports.

Canola oil and meal are also important agricultural exports. Their total export value has remained fairly constant for 1986 and 1987 as the decreased value for oil exports was compensated for by the increased value for meal exports. In 1988, Alberta's international exports of processed canola products were worth $170 million. Primary importers are the United States, which accounted for 27% of Alberta's international exports, and Japan (20%).

Livestock production in the province is a major industry which has undergone significant change over the last several years. Production has become more concentrated and efficient as new methods and technologies have quickly been adopted by Alberta producers. Today, the trend toward greater concentration in livestock finishing (feeding livestock up to marketable stage) continues.

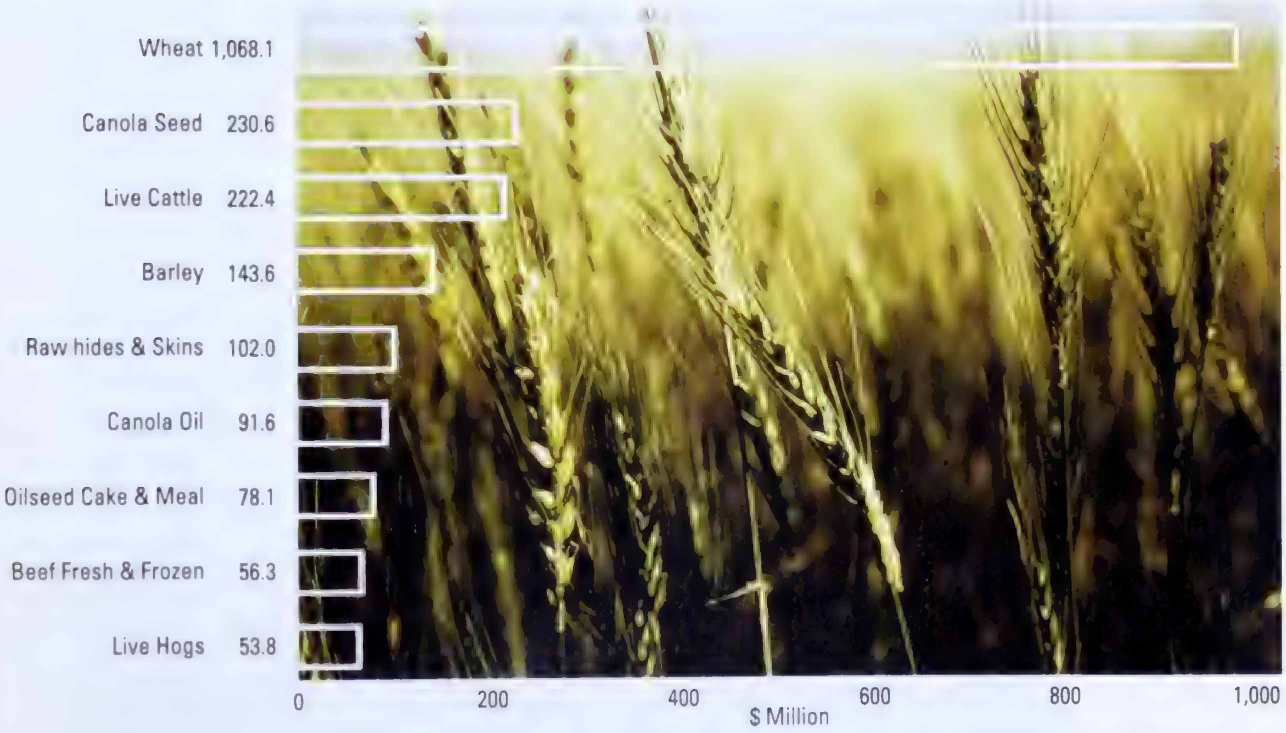
Alberta currently has more than 700 large hog operations compared to less than 200 two decades ago. Balancing this, the number of small volume operations has dropped by 88% – to about 4,100 farms – over the same period. (Large volume operations have more than 528 pigs, small volume operations less than 78.)

Sizes of dairy herds have followed a similar trend. The number of small herds (fewer than 18 cows) dropped by 40% between 1981 and 1986, resulting in a 25% decline in cow numbers and concentrating remaining cows in fewer hands. There has been no corresponding drop in milk production, however, because of a 12% increase in milk production per cow over the same period.

Dairy and poultry producers in Alberta are regulated by marketing boards. These boards ensure, through legislation, that orderly marketing takes place and that producers are protected from disruptive marketing tactics so that an adequate supply of high quality products is consistently available to consumers. Marketing boards continue to play an important role in the province's agricultural sector, although not to the same extent as in other parts of Canada. In 1988, supply-managed agricultural commodities accounted for less than 9% of total farm cash receipts in Alberta, while the nation as a whole derived 21% of farm cash receipts from these commodities.

The Alberta livestock industry is an important meat supplier for all of Canada. Alberta produced 10% of the pork, 44% of the beef and veal, and 39% of the lamb and mutton inspected in Canadian slaughterhouses in 1988. Since Alberta's human population is less than 10% of the nation's total, export markets are vitally important to the province's livestock sector.

ALBERTA TOP 10 AGRICULTURAL EXPORTS, 1988 CHART 4.1



Source: Statistics Canada, Alberta Agriculture

The meat packing industry continues to grow as new packing plants are developed in Alberta and older plants are expanded and modernized. An indication of strength in this sector is the 1988 increase in Alberta cattle slaughter numbers. In most major beef production areas of North America, cattle slaughter numbers declined.

The export of genetic products and technology from Alberta's cattle industry is expanding rapidly. Due to recent changes in international regulations and government policies, Alberta is capitalizing on the international export market for frozen semen and embryos. The province now markets beef and dairy cattle genetics on a worldwide basis.

Agriculture makes an important contribution to Alberta's overall economy, both at the primary producing level and through secondary processing by the food and beverage industry. Reflecting this, the more than $4.4 billion in farm cash receipts generated by various farming enterprises in 1988 was enhanced by a further $4.6 billion worth of shipments by the food and beverage industry.

The farm unit is not only a producer but also a high volume consumer. In 1988, for example, Alberta farmers spent almost $500 million on fuel and repairs for machinery along with millions more on livestock and crop expenses including breed association fees, artificial insemination fees, veterinary bills and livestock purchases from other provinces, pesticides, irrigation, twine, wire and seed. Major outlays are also made for fertilizer. Fertilizer use has tripled in Alberta since 1971, reflecting both the increase in the amount of improved land in the province and the trend toward more intensive crop production.

*Natural gas plant*

**Alberta's Energy Resources**

- Alberta has abundant supplies of fossil fuels including natural gas, conventional crude oil, oil sands, and coal.
- Alberta has 82% of Canadian on-shore reserves of conventional crude oil and more than 85% of the country's conventional gas reserves.
- Virtually all of Canada's oil sands resource is located in Alberta, with deposits estimated to contain a total of 267 billion cubic metres (1,680 billion barrels) of bitumen in place.

# ENERGY

Alberta's extensive energy wealth has for decades had a profound influence on the province's economy, supporting a wide range of resource-related activity that in some years accounts for as much as one quarter of the Gross Domestic Product.

Energy activity has had a major impact on the development of the province's excellent transportation and communications systems and Alberta energy technology and expertise are in international demand.

Still a major force in the economy, the energy industry has also become a key player in Alberta's diversification strategy. Over the years, research targeted at Alberta's huge and sophisticated energy market has become a springboard for the province's new generation of technology-based industries in such fields as telecommunications, electronics, computer software and advanced materials.

Alberta owes its status as Canada's undisputed "energy province" to the generous deposits of oil, natural gas, bitumen and coal which occur throughout the large areas of the province underlain by thick beds of ancient sedimentary rock.

In recent decades, conventional crude oil and natural gas have been the most significant sources of fossil fuel energy. Coal and oil sands, however, are by far the largest potential sources and are destined to become increasingly important in Canada's energy future.

In addition, rivers flowing to the Arctic Ocean and east to Hudson Bay have substantial potential as sources of hydroelectric energy. The province has the potential to develop an estimated 62,000 gigawatt hours per year of hydroelectric energy – primarily by harnessing the Athabasca, Peace and Slave rivers. (Hydroelectric power currently accounts for 12% of the close to 6,581 megawatt installed capacity of Alberta's utilities, with coal and natural gas accounting for the remainder.)

## CRUDE OIL

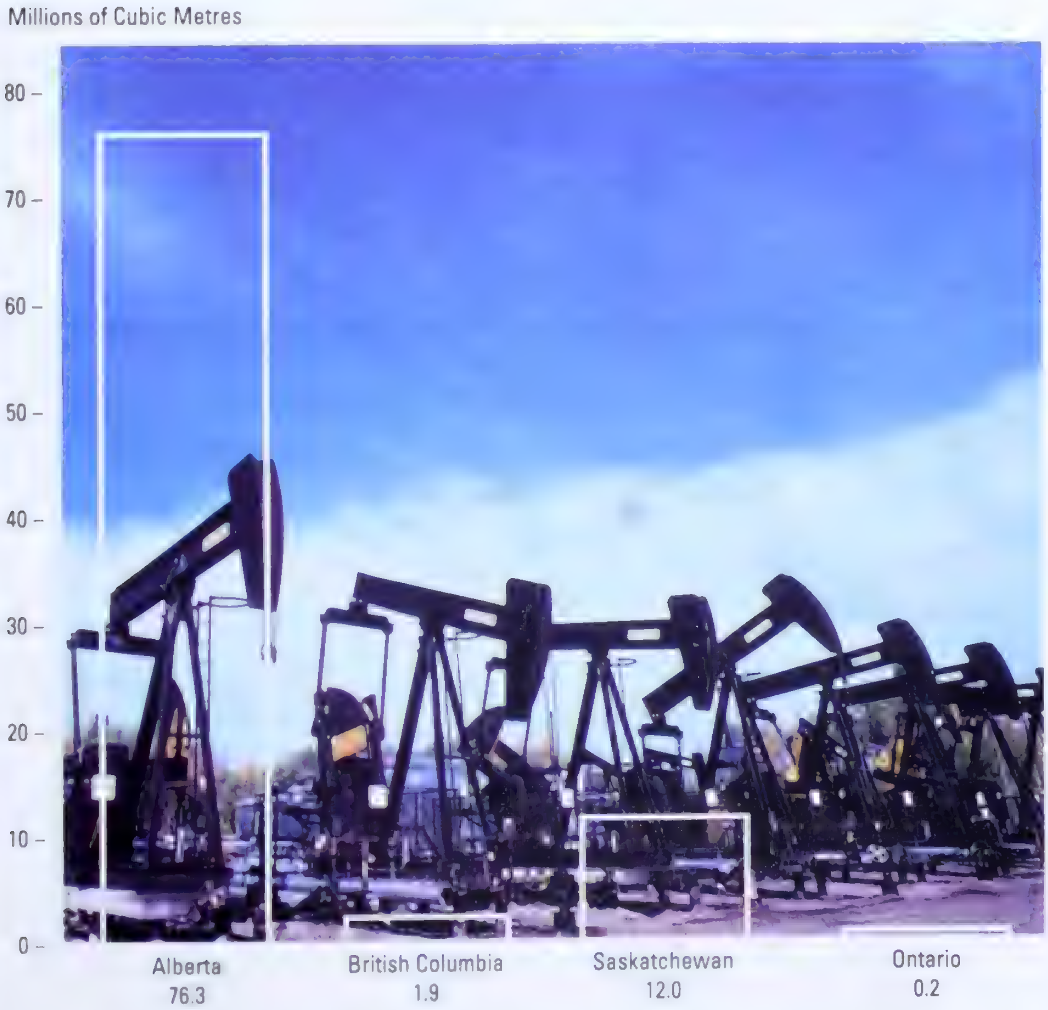
Alberta has three kinds of oil resources which are classified by density:

1. conventional crude oil, which is recovered through normal drilling operations;
2. heavy oil, a thick viscous form of crude, only 10% of which can be recovered without special recovery techniques such as steam stimulation;
3. oil sands, a black, sticky combination of sand, clay, water and bitumen requiring non-conventional recovery operations. Bitumen is immobile at reservoir temperatures.

Together, heavy oil and oil sands production totals 79,500 cubic metres per day – or about one third of Alberta's overall hydrocarbon liquids production. Alberta crude oil and equivalent (conventional light and medium crude oil, synthetic crude, heavy crude and bitumen and pentanes plus) supply both domestic and international markets. The Alberta market takes 22% of the output, followed by export markets which account for 36%, and Canada excluding Alberta, with 42%.

**Alberta's Energy Resources**

- Alberta expertise in energy exploration and development is recognized and marketed worldwide.
- Alberta has nearly 60% of Canada's remaining established reserves of coal, enough to supply the province's electricity needs for more than 400 years.



## CANADIAN CRUDE OIL PRODUCTION BY PROVINCE, 1988

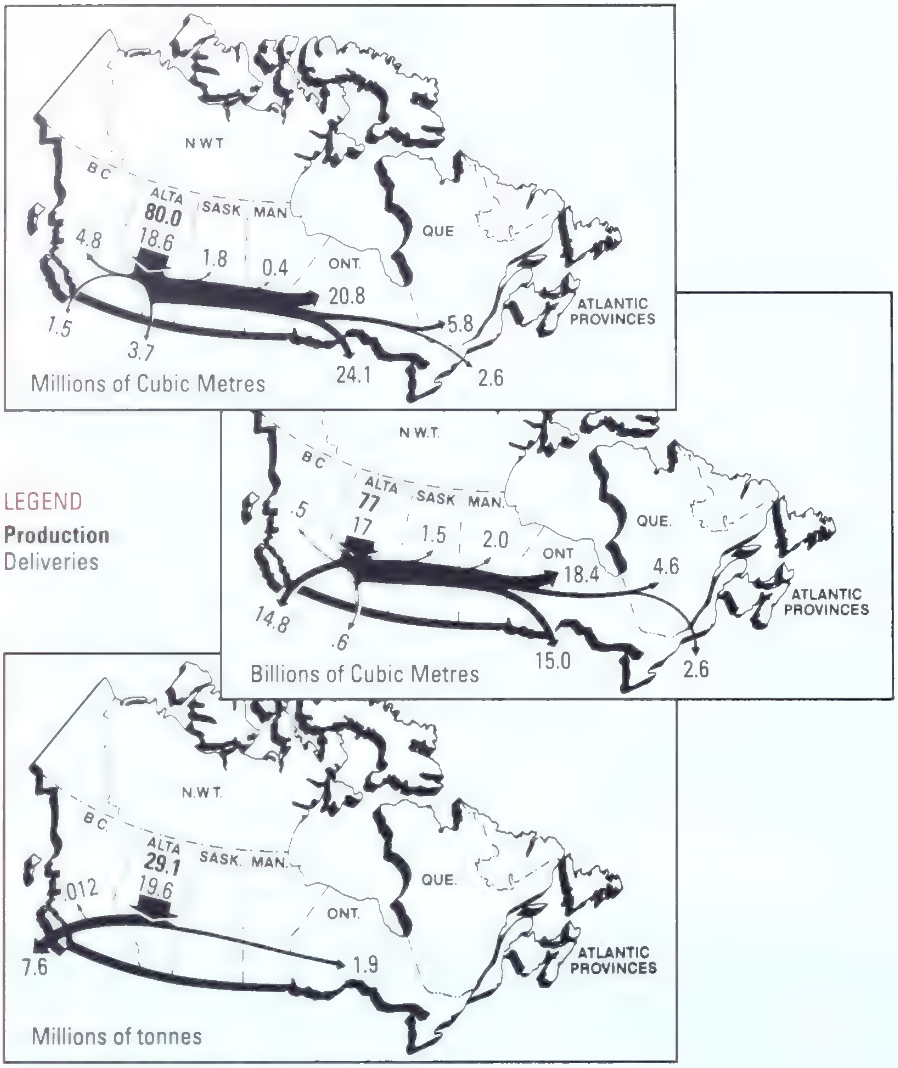
CHART 4.2

SOURCE: STATISTICS CANADA

## MARKETS FOR ALBERTA OIL 1988 CHART 4.3a

## MARKETS FOR ALBERTA GAS 1988 CHART 4.3b

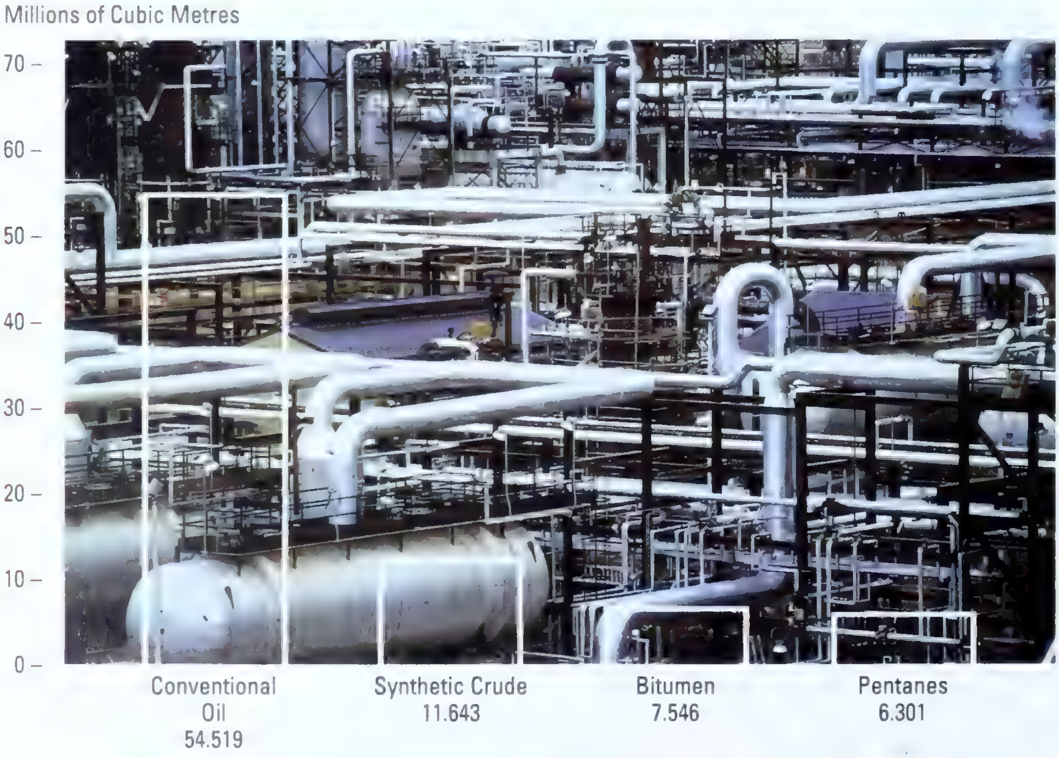
## MARKETS FOR ALBERTA COAL 1988 CHART 4.3c



SOURCE: ALBERTA ENERGY RESOURCES CONSERVATION BOARD

## ALBERTA PRODUCTION OF LIQUID HYDROCARBONS 1988

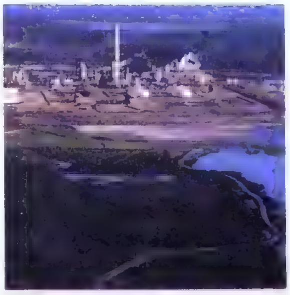
## CHART 4.4



SOURCE: ALBERTA ENERGY RESOURCES CONSERVATION BOARD

# CONVENTIONAL CRUDE OIL

Alberta's remaining established reserves of conventional crude total 593 million cubic metres or 82% of Canadian on-shore reserves. Production from conventional sources totalled 54.5 million cubic metres in 1988. As reserves decline, greater efforts are being made to improve production from existing reservoirs. Water injection, or secondary recovery, is the most common enhanced oil recovery (EOR) technique, but increased attention is being given to advanced or tertiary methods, such as miscible flood (injecting natural gas liquids which act as a solvent), to recover additional oil. More than 45 EOR projects operating in Alberta in 1988 were credited with producing an additional 18.3 thousand cubic metres per day.


*Syncrude plant, Fort McMurray*

# HEAVY OIL

Heavy oil, having an API of less than 25 degrees (density greater than 904 kilograms per cubic metre), is composed mainly of gas-oil, lube oil and asphaltenes – all high density materials. Only a small percentage is recoverable by conventional means; thermal methods, used in the oil sands, are being employed to recover heavy oil. Heavy oil reserves in Alberta are estimated at 53 million cubic metres, with the province's major fields located along Alberta's eastern border.

Currently, most heavy oil is exported to U.S. Midwest refineries, but the Alberta government also encourages the upgrading of heavy oil and bitumen resources in the province. A $1.4 billion upgrader at Lloydminster, Alberta, jointly financed by Husky Oil Ltd. and the governments of Canada, Alberta and Saskatchewan, will make an additional 7,310 cubic metres per day usable by Canadian refineries. The upgrader is scheduled to begin operations in 1992.

**Alberta's Energy Resources**

- Alberta coal is an exceptionally clean burning fuel with low sulphur content.
- Alberta coal gives the province one of the lowest priced electricity sources in North America.
- Alberta is the fifth largest producer of electricity in Canada.

# OIL SANDS

Alberta's oil sands extend from surface deposits to deposits at depths of 760 metres or greater and are enormous, even by world standards. The oil sands represent more than 48 billion cubic metres of potentially recoverable bitumen or 97% of Alberta's total petroleum resources. This is equivalent to more than one third of the world's reserves of conventional crude oil

The largest oil sands deposit is the Athabasca deposit, with an estimated 209 billion cubic metres of bitumen in place, followed by Cold Lake (35 billion cubic metres) and Peace River (23 billion cubic metres). About 10% of the oil sands in the Athabasca deposit lie close enough to the surface to be mined, using draglines and bucketwheel excavators to collect the bitumen and then applying heat, water and chemicals to separate bitumen from the sands. Deeper oil sands deposits require "in situ" (in place) recovery techniques, usually involving steam injection or underground combustion to reduce the viscosity of the bitumen so it can be pumped to the surface through conventional wells.

Billions of dollars have been invested to develop Alberta's oil sands and heavy oil. An even greater investment – for new projects and expansion of existing plants – is planned or under way.

# NATURAL GAS AND BY-PRODUCTS

*Natural gas plant*

Alberta's established natural gas reserves are estimated at 1,628 billion cubic metres or 85% of conventional Canadian reserves. In addition, estimates of natural gas remaining to be discovered and developed total 1,667 billion cubic metres. One of the major finds in the last decade is the Caroline field, with an estimated reserve of 21 billion cubic metres of gas, 30.7 million cubic metres of natural gas liquids and 23 million tonnes of sulphur.

Alberta has more than 600 gas processing plants, with a capacity to process 450 million cubic metres per day of raw gas. These units range in size from small plants, designed to conserve limited volumes of solution gas, to very large complexes which process raw gas from vast non-associated reservoirs and recover substantial amounts of sulphur.

Approximately 28% of Alberta's natural gas production is consumed within the province – for space heating, industrial applications and petrochemical production. About 34% is marketed elsewhere in Canada, primarily in Ontario, with Quebec a distant second. Exports to the U.S. – mainly California and the Midwest – account for 38% of Alberta's production.

An extensive pipeline system carries Alberta natural gas to its various markets within Canada and the U.S. The NOVA Corporation of Alberta gathering system within Alberta carries almost all gas produced to four connecting pipelines: TransCanada PipeLines Limited, which carries virtually all gas to the eastern provinces and to connecting U.S. pipelines; Foothills Pipe Lines Ltd., which goes to Midwest markets and the B.C.-U.S. border; Alberta Natural Gas Company Limited, which carries gas to the B.C.-U.S. border; and Westcoast Transmission Company Limited, which goes to the Pacific Northwest.

At present, increased gas exports from Alberta to the U.S. are limited by pipeline capacity. However, numerous pipeline expansion projects have been proposed with estimated capital costs of more than $10 billion.

Considering the environmental advantages of natural gas over other sources of energy and the expected future domestic supply shortages in the U.S., the long-term growth potential for Alberta natural gas sales to the U.S. is very positive. The Canada/U.S. Free Trade Agreement will enhance these growth opportunities. With deregulation of the natural gas industry in both Canada and the U.S., greater marketing flexibility is emerging in gas marketing and transmission, providing new opportunities for all producers.

# COAL

Coal-bearing formations underlie approximately 300,000 square kilometres of Alberta (almost 45% of its land area) in three distinct regions – the plains, foothills and mountain regions. The map on page 192 illustrates the general pattern of coal distribution. Coal in the foothills and mountain regions tends to have a higher calorific value and less moisture, making it a higher quality fuel. Alberta coal is an exceptionally clean burning fuel with a low sulphur content which makes it environmentally attractive.

Total remaining established (proved) reserves of coal in Alberta at the end of 1988 were an estimated 32 billion tonnes or nearly 60% of the Canadian total. Ultimate recoverable coal resources are estimated at 750 billion tonnes. The majority is subbituminous coal suitable for thermal-electric generation. Lignite, which has a greater moisture content and lower calorific value than subbituminous coal, is present in smaller amounts. These coals make up nearly half of the plains reserves. Foothills coal is generally high-volatile bituminous thermal. The majority of the 2.84 billion tonnes in reserves can be surface-mined.

Mountain coals range from semi-anthracite to high-volatile bituminous, although most are low- to medium-volatile bituminous suitable for coking and for the production of steel. Recoverable reserves in this region total 1.62 billion tonnes, of which about 54% will require underground mining. As only the flat lying parts of these reserves can be mined using conventional technology, a recovery method will have to be devised for the thick and steeply dipping reserves which are often folded and faulted. Most mining in the mountain region is currently done by the openpit, shovel and truck system.

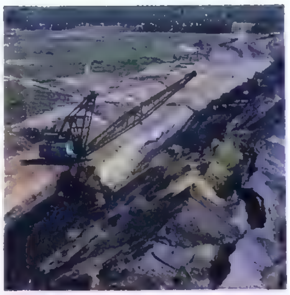
The cost of strip mining the shallow parts of flat lying coal seams of the plains region is relatively low, since the cover is mainly glacial tills and soft sediments. Reclamation of such areas is usually not expensive. Most of the current production of plains region coal is burned in minesite electricity generating stations.

Alberta produced 29.4 million tonnes of coal in 1988, of which 19.9 million tonnes or 68% was consumed in Alberta. Another 1.9 million tonnes were shipped to other provinces and 7.6 million tonnes of bituminous coal went to offshore areas. (Chart 4.3c)

The Alberta metallurgical coal industry is highly dependent on exports to Japanese steel producers while the thermal coal sector has benefited from the use of coal in the province's major electric utilities. In addition, large eastern utilities, notably Ontario Hydro, have begun to supplement their supplies with Alberta coal. The coal sector is now one of the largest extractive industries in the province.

Coal industry productivity has improved through the use of new technology (including larger, more productive equipment) and because of a shift away from many small operations to fewer, larger and more efficient mines.

In future, additional coal could be utilized for increasing power generation, for feedstock in large synthetic natural gas plants, for the manufacture of liquid fuels and to provide heat for the recovery of heavy oils and bitumen from deep oil sands deposits. Export opportunities for Alberta coal appear particularly bright in such Asian markets as Taiwan, Korea and Japan.


*Dragline, TransAlta Highvale Mine*

## ELECTRIC POWER

Alberta is the fifth largest producer of electricity in Canada. In 1988, the province's utilities had an installed capacity of 6,581 megawatts, of which 69% was coal, 19% natural gas and 12% hydro. This includes on-site generation and cogeneration which involves the alternative use of several different fuels.

Much of the province's immense subbituminous coal reserves are surface-mineable at low cost and are reasonably close to the major electric load centres. Alberta's low sulphur coal is one of the lowest priced electricity sources in North America and the supply is great enough to meet the province's electricity needs for more than 400 years.

Hydroelectric power is developed along the Bow River system west of Calgary and along the North Saskatchewan River system adjacent to the foothills of central Alberta.

In 1988, approximately 1,035,000 customers were provided with electricity in Alberta – 803,000 residential customers, 92,000 farm, 114,000 commercial and 25,000 industrial.

Of the three major electric utilities in Alberta, TransAlta Utilities Corporation and Alberta Power Limited are investor-owned and Edmonton Power is municipally owned. The investor-owned utilities supply most of the smaller communities and farms and provide bulk power to the municipally owned distributing utilities of Calgary, Lethbridge and Red Deer.

The utilities operate the system as one interconnected transmission network which links power plants and major consumption centres by an extensive network of transmission lines. These lines extend from Medicine Hat in the southeast to areas beyond Rainbow Lake in northwestern Alberta, within 80 km of the Northwest Territories. Some of the smaller more remote communities are served by individual plants. As a result, virtually all Alberta communities enjoy electric power at reasonable cost.

Alberta is also interconnected to British Columbia through a 500 kilovolt transmission line. This provides energy exchanges which benefit consumers in both provinces. British Columbia's interconnection with the Bonneville Power Authority connects Alberta with the United States. A 240 kilovolt link with Saskatchewan was completed in 1989. In addition, operators of small generating plants, many of them on Alberta farms, sell their output to utility companies.

The Public Utilities Board, a quasi-judicial body, approves rates for investor-owned utilities following public hearings. Alberta electricity rates are among the lowest in Canada and the United States thanks to abundant coal resources, which will help ensure the rates remain competitive in future.

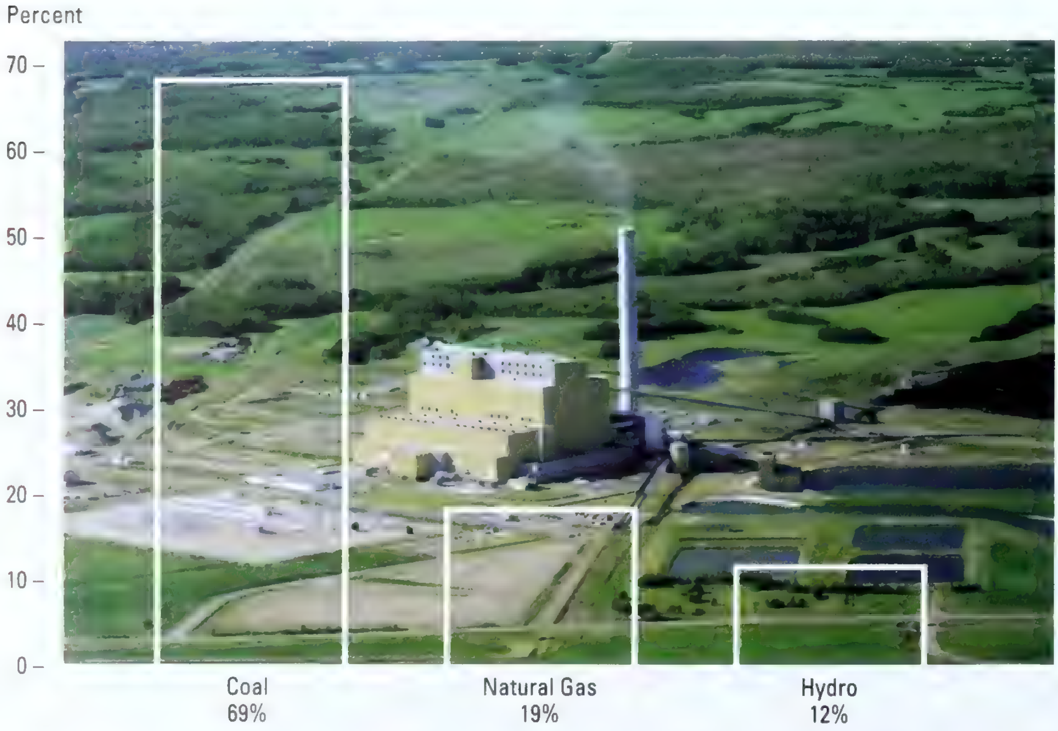
Rates are similar throughout the province as a result of the Electric Energy Marketing Agency. The provincial agency equalizes the generation and transmission charges which are the major components of consumer rates.

## ALBERTA'S ENERGY GENERATING CAPACITY 1988

Total Energy Generating Capacity – 6,581 Megawatts

CHART 4.5

SOURCE: ALBERTA ENERGY RESOURCES CONSERVATION BOARD



With its existing power plants and those under construction, Alberta has sufficient generation capacity to reliably meet its forecast load requirements for a number of years. Future generating units include the second 366 megawatt unit of the Sheerness Power Plant and the second 386 megawatt unit of the new Genesee Power Plant.

*Coal Research Centre, Devon*

# ENERGY RESOURCE MANAGEMENT AND REGULATION

The Government of Alberta owns about 85% of the province's mineral resources and leases mineral rights to the private sector for development. While the lands and resources in approximately 99% of Alberta's northern regions are Crown owned, in the more heavily settled southern areas roughly half of all mineral rights were granted by the Crown to private interests early in the region's history.

The provincial government has been responsible for Alberta's energy resources since 1930, when the federal government turned over control of natural resources to the provinces. As custodian, the government's role is to set the broad framework for resource policy and regulation. From disposition of rights to collection of royalties, it manages the resource through a number of departments and agencies.

While other government departments participate in resource management, the Department of Energy is responsible for overall policy and management of Alberta's energy resources. By right of ownership, it disposes of mineral rights and collects the provincial government's fair share of petroleum resource revenue through royalties.

The Energy Resources Conservation Board (ERCB) is responsible for ensuring that Alberta's energy resources are developed in a safe, orderly manner that avoids waste, controls pollution and brings fairness and a sense of balance to the needs and concerns of the public, the government and the industry. Part of this responsibility involves enforcement of the Reclamation Act, which requires that land affected by energy developments be returned to a state equal to or better than it was prior to development.

The ERCB ensures the safe development of Alberta's energy resources by setting standards and specifications for energy development projects, through regulations and conditions included with project approvals. It also inspects operating sites and enforces the standards, specifications and conditions of approval. Before a potential oil or gas well is drilled, a well licence must be obtained from the ERCB.

The Alberta Petroleum Marketing Commission (APMC) sells the province's share of crude oil obtained through royalties and, on request, acts as an agent for other producers. At the direction of government, the commission markets the government's share of the synthetic oil production from the Syncrude project.

The Commission administers several statutes pertaining to natural gas and intervenes on behalf of the government in regulatory proceedings outside Alberta.

The Alberta Oil Sands Technology and Research Authority (AOSTRA) is a provincial Crown corporation with a mandate to promote research and development of technology leading to the efficient and economic recovery and processing of crude bitumen and other oil sands products.

Working in cooperation with industry, AOSTRA is involved in activities ranging from academic and institutional research to support of large-scale field pilots and demonstration units. The development of technology for enhanced recovery from conventional light oil reservoirs was added to AOSTRA's mandate in 1980.

Alberta Oil Sands Equity (AOSE) manages the province's investment in the Syncrude Canada Ltd. project, the OSLO project, and the Lloydminster Bi-Provincial Upgrader.

*Alberta Research Council, Edmonton*

## ENERGY CONSERVATION

In recent years energy consumers have become more interested in reducing energy use and saving money. Environmental issues associated with air pollution and the changing atmosphere may result in renewed emphasis on energy conservation in the 1990s.

Although Alberta is well endowed with resources, major efforts are made to ensure that resources are developed and consumed in the most efficient and economic manner. For more than 50 years, the Alberta Energy Resources Conservation Board has monitored energy production to ensure it is both safe and efficient and that it has minimum impact on the environment.

More recently (in the 1980s), the provincial government has introduced information and awareness programs to assist energy users in evaluating their technical options for reducing energy costs. The transportation and industrial sectors are the largest energy consumers in the provincial economy. Each is responsible for 30% of total energy use. Residential and commercial sectors (including schools, hospitals, public administration and businesses) each account for somewhat less than 20% of total energy use. Energy used in agricultural production constitutes roughly 7% of the provincial total.

Major energy conservation programs are directed to home owners and residential contractors, school teachers and students, and industrial energy users, to promote awareness of good energy management practices.

Programs of technical advice and/or financial assistance for energy conservation on farms, in school buildings and in government buildings have also been established.

The Industrial Energy Conservation Program is of special interest because it is directed to the large energy-consuming sector in the province. A key element of this program is free analysis, on request, of an industrial or commercial establishment's energy consumption. The goal is to identify opportunities for energy savings.

The energy audit service, which has been available since 1980, delivers more than 200 energy audits a year to business, industry and institutions. Audit results suggest typical energy cost savings of 20% can be achieved, mostly by adopting inexpensive energy management measures.

In future, competitive pressures on business are expected to further promote the efficient use of energy.

# FORESTRY

With more than $3.5 billion worth of new forestry projects planned or under way at the end of 1988, Alberta has emerged as a major international focus for forest industry investment. The Alberta forest products industry currently has shipments valued at nearly $1.5 billion. Over the next decade, new pulp and paper operations, lumber mills and panelboard manufacturing plants will dramatically boost that total, while creating close to 5,000 new direct jobs and indirect employment for another 10,000.

Seen as a major advance in Alberta's campaign for economic diversification, new forestry developments are the result of the government's program to encourage investment in one of North America's largest unallocated timber resources. The Forest Industry Development Division, established in 1986 as part of the Department of Forestry, Lands and Wildlife, promotes both new development and expansion of existing forest-based industries.

While Alberta's forest industry has traditionally harvested softwoods (mainly spruce and pine), the province's vast and largely underutilized hardwood resource (predominantly aspen) has also become a major attraction in recent years. Advances in technology now favour the use of aspen in both pulp and paper and panelboard manufacturing.

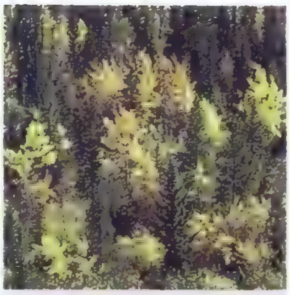
Alberta's forests are impressive in size. Recent inventories reveal that forests cover at least 360,000 square kilometres or 55% of the province. A majority of this land is publicly owned and managed primarily for forestry. (Only a tiny portion of Alberta's forests are located on privately owned lands.) Containing nearly 2.5 billion cubic metres of wood material, Alberta's forests rank fourth among Canadian provinces in terms of both merchantable timber volume and productive forest area.

Approximately 196,000 square kilometres of the forest area are classified as timbered. Another 19,000 square kilometres are regarded as potentially productive land capable of growing timber. And an area of 142,000 square kilometres, including stretches of muskeg and bushland, are classified as unsuitable terrain. Most of the forest land is in the Boreal Forest Region. The northernmost treed area of the Northern Hemisphere, the Boreal Forest forms a belt across North America, Europe and Asia. Alberta also has Subalpine and Montane Forest Regions on the eastern slopes of the Rocky Mountains.

Of the 196,000 square kilometres of timbered forest land, approximately 45% is covered with coniferous, 35% with deciduous and 20% with mixed coniferous and deciduous trees. Spruce, pine, fir, aspen, poplar and birch are the predominant species.

While forest-based industries will make an increasingly important contribution to the economy in future, they currently account for approximately 7.5% of the value of manufacturing shipments in the province and for 8.5% of the value added for manufacturing. Current coniferous operations have an authorized annual cut of approximately 12.1 million cubic metres and deciduous operations of approximately 2.9 million cubic metres. With new lumber and pulping facilities coming on stream in the next five years, an additional 1.3 million cubic metres of coniferous and 5.5 million cubic metres of deciduous timber will be used annually.

There is some room for expansion in the pulp and sawmill industry, with 0.9 million cubic metres of coniferous and 2 million cubic metres of deciduous timber unallocated at this time. Despite the



*Forests cover 55 per cent of Alberta*

**Alberta's Forests**

- Alberta ranks fourth among Canadian provinces in volume of merchantable timber and productive forest area.
- Alberta forests cover 360,000 square kilometres and contain 2.5 billion cubic metres of wood material.

*Modular office unit manufactured in Alberta*

**Alberta's Forests**

- At the end of 1988, more than $3.5 billion worth of new forestry projects were planned or under way in Alberta.
- Current direct forest industry employment will rise by 5,000 in the 1990s due to industry expansion.

many new facilities planned in the next five years, significant interest is still being expressed in this unused portion of Alberta's forests. The present annual cut (1987-88) of trees is approximately 7.4 million cubic metres coniferous (softwood) and 900,000 cubic metres deciduous (hardwood).

Over the past two decades, significant change has occurred in the mix of forestry production. Prior to 1956, lumber manufacture accounted for 85% by volume of total forest production. By the mid-1970s, lumber accounted for about 60% of the total due to an increase in the production of pulpwood.

This shift was caused in part by the opening of large pulp mills at Hinton in 1956 and near Grande Prairie in 1973. Further diversification toward pulp, paper and panelboard production has taken place since the early 1980s.

Lumber and plywood now account for approximately 85% of the total timber harvested in the province. This is the result of reduced demand from pulp mills for roundwood. The mills have replaced roundwood, once used in the production of pulp, with wood chip residues from lumber production. As a result, wood chip production has increased by 350% in the last 10 years.

The large forest industry complexes now being built in Alberta reflect the increasing modernization of the industry and are seen as the key to maintaining Alberta's competitive position in world lumber and pulp and paper markets. Among the most technologically sophisticated complexes in Canada, Alberta operations are also among the most environmentally sound in order to comply with Alberta's stringent environmental standards. The province's recently announced pollution control standards for pulp mills, for example, are the toughest in the world, making Alberta mills world leaders in controlling the production of dioxins and other organic compounds and minimizing their release into the environment.

New technological developments are also having a strong impact on the structure of Alberta forest industries. Having introduced the first oriented strandboard mill in Canada, Alberta now has three such operations. Canada's first medium density fibreboard plant is in production in Alberta, and Alberta's first chemi-thermo-mechanical pulp mill, began operation in 1988.

The pulp and paper industry in particular is undergoing a significant transformation in Alberta. At Whitecourt, Alberta's first newsprint mill will start-up in 1990. At the same time the province is experiencing a dramatic increase in bleached kraft pulp capacity, and a fine paper mill is expected to be developed by the mid-1990s.

Reforestation is a vital aspect of forest management in Alberta. With the implementation of a sustained yield policy, responsibility for reforestation was assumed by government and the timber industry. Regeneration requirements are set and surveys regularly conducted on harvested areas. Minimum stocking standards are enforced.

Key to Alberta's reforestation effort is the Pine Ridge Forest Nursery (PRFN) located at Smoky Lake, Alberta. Built with $15.6 million from the Alberta Heritage Savings Trust Fund, this facility has a technologically advanced nursery encompassing tree seed processing and genetics. PRFN has the capacity to produce 20 million container seedlings and 18 million barefoot seedlings annually. To date, almost 200 million seedlings have been produced for Alberta's reforestation program. They are made available to private sector forest companies and to meet government reforestation commitments.

As Alberta's principal landowner, the provincial government provides timber rights to the private sector under specified terms and conditions, while retaining title to the land. Authority to harvest timber is provided through Forest Management Agreements, Timber Quotas or Timber Permits.

About 332,000 square kilometres of forest area are subdivided into more than 100 Forest Management Units in 10 forest administration regions. Based on current inventories (together with recognition of multiple forest uses), an annual allowable cut and cut progression schedule is developed under a timber management plan for each management unit. The goal is to ensure a sustained timber supply from that unit and at the same time recognize other uses of the land.

Based on government's own initiatives or in response to requests by investors, potential development areas, where annual allowable cut is available, are identified. These areas in turn form the basis for negotiation with companies or investors interested in establishing major facilities to use this resource. Potential investors or developers must prove their projects will utilize the timber resource efficiently, follow sound forest management practices and meet environmental and social requirements. Once a proposal has been selected by the provincial cabinet, the Alberta Forest Service negotiates a Forest Management Agreement with the company involved.

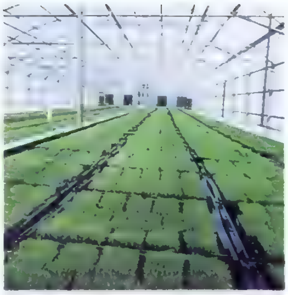
Each Forest Management Agreement provides the holder with harvesting rights over extensive areas of commercial timber at specified dues rates and under specific conditions. The land within a Forest Management Area must be managed on a sustained yield basis to ensure continued production. All agreements require the holder to conduct inventories, develop management and annual operating plans, and reforest all cutover areas. The Forest Management Agreement negotiated with the company is approved by cabinet.

Most other commercial timber operations are conducted under the authority of timber quotas. Where timber is available for harvesting, a quota may be authorized and offered for competitive sale at public auction. In order to provide security of tenure, quotas are generally established for 20-year periods with the volume of production regulated over five-year periods. Actual harvesting is authorized by issuance of successive timber licences. A licence is issued once a quota holder has submitted the performance deposit, paid assessed fees and costs associated with licensing and establishing the quota, and complied with all regulations.

Commercial Timber Permits (C.T.P.s) may be offered when a surplus annual allowable cut is present or has accumulated in a management unit or when timber must be removed quickly because it is dead, diseased or damaged or is in a development or research area. Generally C.T.P.s are held by small operators. These permits are issued for one to three years.

Local Timber Permits (L.T.P.s) are established primarily to give local residents an opportunity to harvest timber for their own use or for sale. Volume of timber allocated under an L.T.P. is usually small. Permits have a one-year term.

Forest policies in Alberta are designed to ensure the province has sufficient resources to supply forest needs over the long term. At the same time, they reflect a determination to maintain the benefits that accrue to the province from the natural beauty, wildlife, and recreation potential of the forests.



*Pine Ridge Nursery Greenhouse*

**Alberta's Forests**

- Alberta's forest industry is technologically advanced, pioneering the utilization of aspen and building Canada's first oriented strand-board mill and first medium density fibreboard plant.

# MINERALS

Since 1971, Alberta has led all the provinces in value of mineral production. Most valuable are the fossil fuels, which are discussed in the Energy section. But the province also has many other minerals of the non-fuel variety. These are mainly the industrial, or non-metallic minerals – the basic building blocks of industry. Metallic minerals are less important in Alberta as few deposits are known to exist and little exploration has taken place.

Alberta has huge supplies of industrial minerals ranging from limestone and salt to sulphur and construction aggregates. Together, they form a broad and valuable raw material base for Alberta industry.

The more than $750 million worth of industrial minerals produced in the province in 1988 represented 13.8% of total Canadian industrial mineral production. Sulphur sales, at close to $421 million in 1988, account for about three quarters of Alberta's annual industrial mineral production value. Sulphur is one of the few industrial minerals in Alberta with a high enough value to export. Most other industrial minerals lack long distance marketing potential because of their high bulk and low value – and are therefore largely consumed within the province.

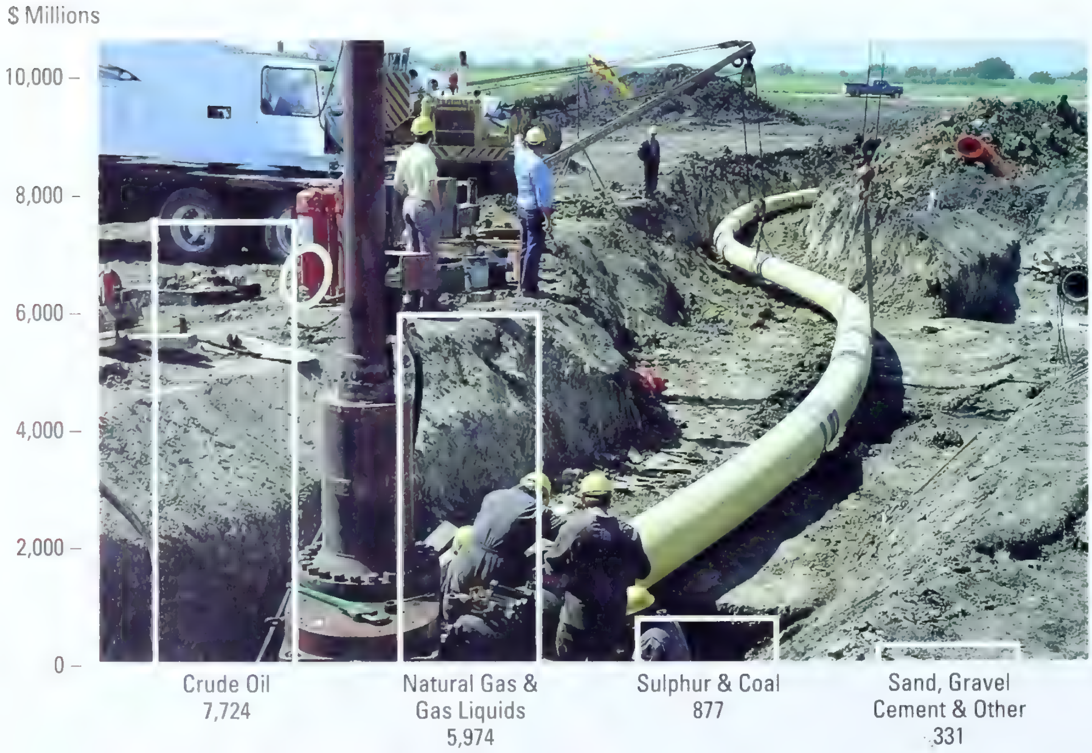
**Alberta's Minerals**

- Alberta has led all provinces in value of mineral production since 1971.
- In addition to hydrocarbon minerals, Alberta has generous supplies of industrial, non-metallic minerals including sulphur, salt, limestone, sand and gravel.

## MINERALS FOR CONSTRUCTION MATERIALS

Minerals of this group include the materials for cement, ceramics, and building products manufacturing, and the mineral materials (natural or manufactured) used for aggregates. These are sufficiently developed to supply local needs and there are some exports of construction materials outside the province.

Portland cement, one of the most versatile and widely used of all construction materials, is manufactured



VALUE OF ALBERTA MINERAL PRODUCTION, 1988

CHART 4.6

SOURCE: STATISTICS CANADA

from limestone and clay, both readily available in Alberta, and from gypsum, which is imported mainly from British Columbia. With capacity to produce 2.6 million tonnes annually, Alberta's cement industry had production valued at $126 million in 1988.

Huge reserves of limestone are found in rock formations exposed along many of the ranges of the Rocky Mountains. These limestone formations underlie the plains as well, but are generally too deep for exploitation except in the northeast region. Shallow, flat lying beds of limestone are exposed in the vicinity of Fort McMurray.

The best limestone deposits are found on the easternmost ranges of the Rocky Mountains, where quarries are operated at six locations. The two largest plants, at Cadomin and Exshaw, each produce 900,000 tonnes of limestone annually for cement making. Other quarries in the mountains produce limestone primarily for lime manufacture and agricultural products.

Marl, a material that can substitute for limestone in cement making, is also widely found in Alberta. However, most deposits are small and not commercially developed.

Clays and shales are widespread in Alberta. Found throughout the plains and extensively in the mountain region, the clays are mostly of the low grade, low aluminal variety, suitable for cement or low value ceramic use. While no special grade of clay was previously needed for cement making, the current trend is to use low alkali clays which are much less widespread.

Most prevalent among Alberta's ceramic clays are the "common brick" type, although stoneware clay and fireclay are found in a few localities. The better grades of clay, such as the stoneware variety found mainly in the Cypress Hills area of southeastern Alberta, are used to produce structural clay wares in plants at Medicine Hat and Redcliff. They are also blended with imported clays for use in area pottery plants.

The value of ceramic clay products produced in Alberta in 1988 was $9.8 million. Most structural wares are used within the province in the construction industry. Other products are marketed widely in western Canada. As described elsewhere in this section, Alberta clays and shales are also used for manufacturing lightweight aggregate.

While Alberta has several known gypsum deposits in northern Alberta, they remain undeveloped due to remote or restricted locations or difficult access. Underscoring their potential, however, is the fact that Alberta annually imports about 325,000 tonnes of gypsum, mainly from British Columbia, to feed its gypsum wallboard and cement industries.

Likely to affect future development of Alberta's gypsum deposits is the availability of phosphogypsum, a waste byproduct of the phosphate fertilizer industry. Four fertilizer plants in Alberta have combined phosphogypsum production of 1.3 million tonnes annually. No use is made of the material at present, due to high processing costs and a potential radiation hazard from the sedimentary phosphate rock (which can contain uranium and radium). However, technology for its safe use is available from Japan and Europe, where phosphogypsum is substituted in a full range of gypsum products.

Another mineral important to Alberta industry is silica sand. Silica sand is used in glass and glass fibre manufacture. About 300,000 tonnes are used for oilwell reservoir fracturing, sand blasting, foundries and a host of minor applications. These silica sand requirements are met in part by imports

*Sulphur unit train in the Rockies*

**Alberta's Minerals**

- Alberta had 1988 industrial mineral production valued at $750 million – 13.8% of the Canadian total.
- Alberta is the world's leading producer of elemental sulphur from hydrocarbon sources, with 1988 production valued at $421 million.
- Alberta has significant potential for metallic mineral development – in the Canadian Shield and elsewhere throughout the province.
- Alberta's Clear Hills iron deposits constitute Western Canada's largest potential source of iron ore.

(mainly from western Canadian sources) and partly by upgrading local deposits. Production of local sand was valued at $5.3 million in 1988.

*Inland Cement plant*

Dimension stone used for building and ornamental purposes is produced in small quantities in Alberta. The most common type is sandstone, quarried near Canmore in the Rocky Mountains. In addition, granite has been quarried on a test basis from a deposit near Fort Chipewyan in northeastern Alberta.

As basic materials of construction, aggregates constitute by far the largest tonnage volume of industrial mineral production in Alberta, exceeded in value of production only by sulphur and cement. Being heavy, bulky, low priced materials, aggregates cannot be effectively marketed beyond distances of approximately 100 kilometres. Consequently, many aggregate producing sites are scattered across the province to serve local construction requirements.

Sand and gravel make up the bulk of aggregate production and use, with 1988 production of 42.5 million tonnes valued at $134 million. Roadbuilding accounts for about two thirds of the material used. The remainder is used in concrete and asphalt mixes, dam construction, railway ballast and a number of minor applications.

While sand and gravel deposits are widespread and sufficient to meet provincial needs, local shortages occur, suggesting that haulage distances will be an increasingly important factor in future development.

Lightweight aggregate production in Alberta consists mostly of expanded clays and shales made from local materials. Some imported vermiculite and perlite are made into expanded aggregates for specialized application in lightweight plaster and insulating concrete. Expandable clays and shales are extensive in Alberta, although many are located too far from urban markets to warrant development. A plant in northwest Edmonton produces expanded aggregate from surface clay deposits on the plant site. Another in Calgary uses shales quarried a few kilometres south of the city. Expanded clay aggregates are mainly used in Alberta for concrete block manufacture.

Other Alberta resources in mineral related categories include bentonite and peat moss. Bentonite, used mainly in foundries and for lining dams and ponds, is common in the province. Pure deposits are rare, however, and only one deposit – near the Battle River in central Alberta – is currently worked, producing 12,000 tonnes per year.

Peat moss bogs are widespread throughout the northern two thirds of the province. In 1988, 86,000 tonnes of peat moss valued at $15.6 million were harvested from four Alberta sites. Much of this was exported, mainly for horticultural use.

# MINERALS FOR CHEMICAL INDUSTRIES

Alberta minerals (other than hydrocarbons) that serve as basic raw materials for the chemical industries include salt, sodium sulphate, sulphur and limestone. End users are the wood pulp, fertilizer and lime industries, whose products are often commodities of world trade.

The wood pulp industry in Alberta and western Canada provides a major market for the province's output of salt, which is used in the form of chloralkali chemicals, including chlorine, sodium hydroxide and sodium chlorate. Part of Alberta's salt production is also used directly for purposes ranging from household consumption to ice control on roads.

Alberta's salt deposits are vast, underlying almost half the province in beds 60 metres or more in thickness. Two salt plants operate in the province. One, at Fort Saskatchewan, a few kilometres northeast of Edmonton, brine salt from beds 1,900 metres deep for chloralkali chemicals manufacture. At the Lindberg plant, in east central Alberta, salt is brined for domestic and industrial use from beds 1,100 metres deep. In addition, salt beds are used indirectly at three localities for underground storage of petroleum products in artificially created caverns.

Salt production in 1988 was 1.2 million tonnes valued at $17.5 million. Approximately 85% of production was for chemical use.

The lime produced in Alberta is the high calcium type requiring high purity limestone as the starting raw material. About 430,000 tonnes of limestone for lime making are produced yearly from quarries in the Crowsnest Pass and the Bow Valley. Another 300,000 tonnes are produced from these same quarries for miscellaneous uses. Large deposits of dolomite located near the limestones are not utilized, however, as dolomitic (or magnesian) lime is not currently produced in the province.

Production of Alberta lime in 1988 was 186,000 tonnes valued at $17.6 million. This production serves many markets, both in the province and outside. Major users are the chemical and metallurgical industries. Pulverized limestone rock is also produced for direct use as a substitute in some lime applications. Expansion of Alberta's pulp and paper industry will create significant new opportunities for Alberta limestone, as a basis for chemical lime and as a potential paper filler.

*Exshaw limestone quarry*

Alberta produces 60,000 tonnes per year of sodium sulphate, about 10% of Canada's output. Production is from a single plant at Metisko Lake, east of Red Deer. In 1988 production was valued at more than $3 million.

Alberta's sodium sulphate is a high purity product used chiefly in detergents. It is also used in the manufacture of glass, sodium, chemicals, pharmaceuticals and fertilizers and in dyeing, tanning and uranium processing. Reserves in the Metisko Lake deposit are estimated at about 3 million tonnes. Several other known deposits in Alberta are too small for economic development at present.

Alberta is a major producer and exporter of sulphur, having the world's largest production from hydrocarbon sources. Most comes as a co-product of natural gas processing, collected in sulphur extraction plants scattered throughout the province. A small percentage is recovered from synthetic crude oil extracted from the Athabasca Oil Sands. In 1988 Alberta sulphur production totalled close to 5.6 million

*Alberta sulphur is used in pulp processing*

tonnes, with sales valued at $421 million. Less than 25% of Alberta sulphur sales are to Canadian industries; the rest are to export markets.

Principal domestic consumers of sulphur are the wood-pulp processing industry which uses it in the manufacture of bleaching liquor for the kraft process, and the fertilizer industry, which uses sulphuric acid to leach phosphate from phosphate rock. Sulphur is also a component in the manufacture of fertilizers such as ammonium sulphate. Western Canada's fertilizer industry is based largely in Alberta because low cost sulphur and natural gas are both readily available. Much of the production is exported for the large agricultural market in the western United States.

Among many lesser applications, sulphur is used in the manufacture of chemicals, rubber products, explosives, plastic and synthetic resins, and in petroleum refining and uranium ore processing.

## METALLIC MINERALS

Few metallic mineral deposits are known in Alberta. Production has been limited to small amounts of placer gold, recovered from river gravels and as a byproduct of gravel screening and washing operations (in pre-glacial deposits). Production in 1988 was reported at 20,000 grams.

Despite the current lack of metallic mineral production in Alberta, many parts of the province are believed to have potential for metallic mineral development. The Canadian Shield in northeastern Alberta, for example, has a favourable geological setting for metallic mineralization. Uranium showings have been found near Lake Athabasca, and uranium exploration on the Shield is currently active. Other potential sources of metallic minerals are the volcanic rocks of southern Alberta with their gold and copper showings, and the sedimentary iron deposits of the Clear Hills area of northwestern Alberta.

The Clear Hills iron deposits, with 180 million tonnes of proven strippable ore, constitute the largest potential source of iron ore in the four western provinces. However, the low grade (35% iron) and complex metallurgy have barred development to date.

Magnesium-rich brines exist in several of Alberta's subsurface reservoir formations. These brines have magnesium concentrations eight to 10 times that of seawater, the source of most of North America's magnesium metal. They may have economic potential for magnesium metal extraction by the Dow (electrolytic) process.

The oil sands may also be an important future source of metallic minerals. Titanium and zirconium metals, found in the tailings from oil sands plants, and vanadium and nickel found in residual bitumen coke, hold potential for commercial recovery. ■

*Alberta's energy industry is a catalyst for growth in other sectors.*

# 5 MANUFACTURING INDUSTRIES

Food processing is Alberta's largest manufacturing industry

As the Alberta economy expands and diversifies, manufacturing continues to play an increasingly significant role in development and growth. Over the last decade, substantial progress has been made in diversifying the types of goods produced, in entering more domestic and international markets, and in balancing the growth of manufacturing opportunities throughout the province. All of these developments reduce dependence on the sale of unprocessed resources and lessen vulnerability to pricing changes in world commodity markets.

# ROLE IN ALBERTA'S ECONOMY

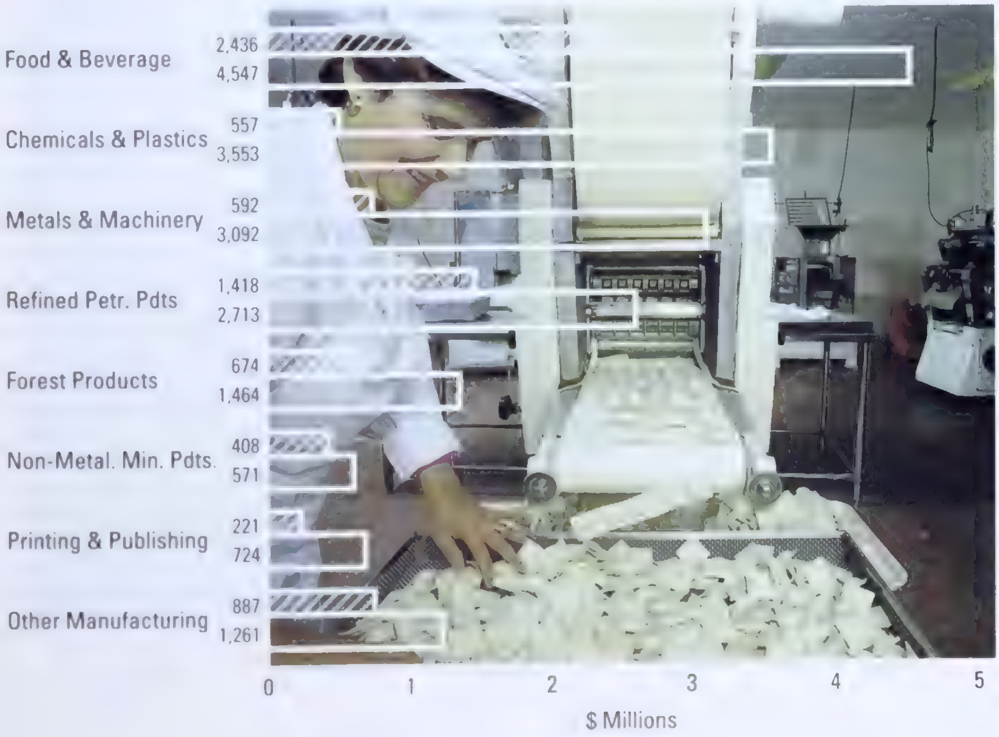
Key indicators of the significance of manufacturing include the number of persons employed, the variety of finished and semi-finished goods produced, the gross value of production in real terms, and the volume of new investment in plant and equipment.

Over the past 10 years the value of shipments has grown substantially. Since 1978, when manufacturing shipments were $7.4 billion, values have increased by an annual average of approximately 10%. In 1988, the estimated value of shipments reached $17.9 billion, about a 10% increase over the previous year. In real terms, this represents an increase of approximately 5.2% deflated by the Industrial Producer Price Index. Employment in Alberta's manufacturing sector averaged 95,000 in 1988 compared to 63,000 in the oil and gas industry.

The fastest growing industries in the sector have been the chemical and chemical products industries, forest products, and industrial metal and machinery products. Other industries such as plastic products, telecommunications, electronics, fashionwear and consumer products have also grown in importance. While food processing remains the largest manufacturing industry in Alberta, rapid growth in these other industries has helped develop a much more diverse manufacturing base.

**Alberta's Manufacturing Sector**

- Between 1978 and 1988 the value of Alberta's manufacturing shipments increased by an average of nearly 10% annually – from $7.4 billion to $17.9 billion.
- Employment in Alberta's manufacturing sector averaged 95,000 in 1988, while new investment exceeded $1.5 billion.



VALUE OF ALBERTA MANUFACTURING SHIPMENTS, 1988

CHART 5.1

▨ 1978

🟩 1988

SOURCE: STATISTICS CANADA

**Alberta's Manufacturing Sector**

- International exports of manufactured products in 1988 amounted to $4.1 billion or 23% of total value of manufacturing shipments. Top manufacturing export categories include petrochemicals ($1.8 billion), forest products ($700 million), primary metal products ($377 million), processed food products ($496 million), electronic products ($144 million), and industrial machinery ($146 million).

International exports of manufactured products in 1988 amounted to more than $4 billion or 23% of total value of manufacturing shipments. Top manufacturing export categories include petrochemicals ($1.8 billion), forest products ($700 million), primary metal products ($377 million), processed food products ($496 million), electronic products ($144 million), and industrial machinery ($146 million).

Alberta has been highly successful in attracting new investment to further upgrade its resources and develop new product lines. Annual plant investment has increased rapidly in recent years, amounting to more than $1.5 billion in 1988. Major new capital expenditures are under way or planned in pulp and paper, petrochemicals, specialty chemicals, food processing, and primary metal industries. Total estimated value of these projects alone is close to $6 billion.

# FOOD PROCESSING AND BEVERAGE INDUSTRY

The food and beverage industry has traditionally been a leading manufacturing sector in Alberta. In 1988, food and beverage shipments reached nearly $4.6 billion or 25% of total manufacturing shipments in Alberta.

The meat processing industry, which represents about half of total processed food shipments, is undertaking new investment that will help Alberta develop a world class food processing industry. With the construction of new facilities and upgrading and recapitalization of existing plants, Alberta companies will be in an excellent position to develop new markets and to meet the changing needs of their traditional markets for beef, pork and other products.

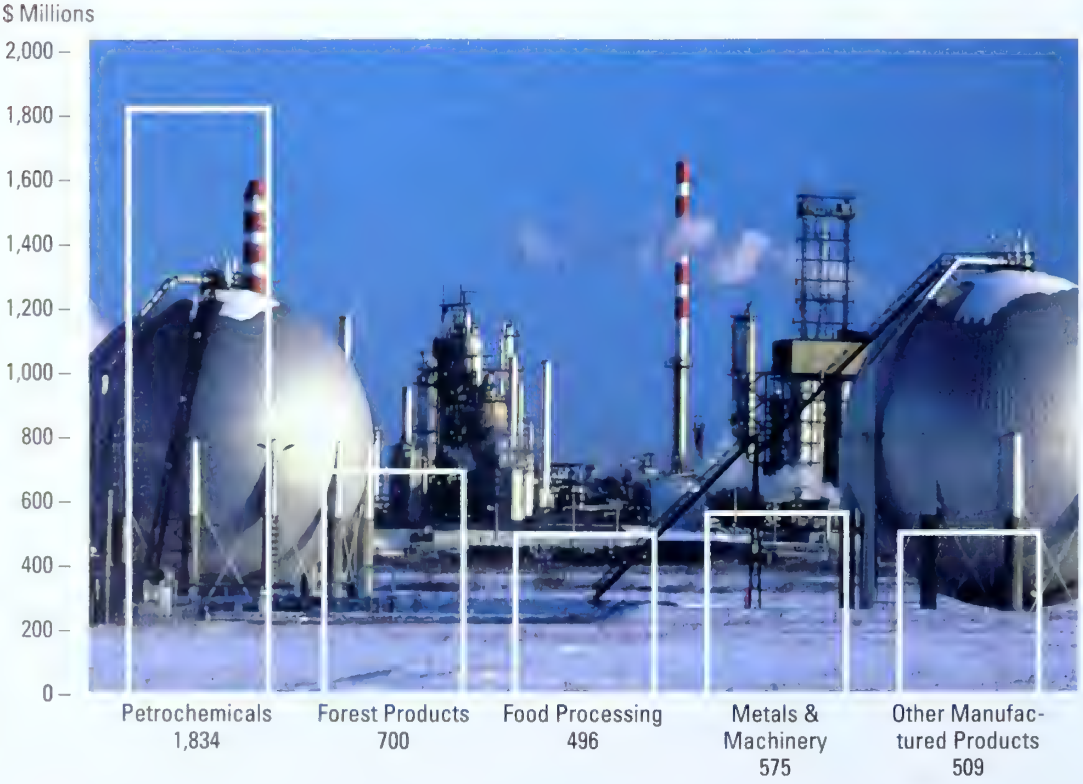
New market opportunities are also emerging in other areas of food processing such as specialty prepared

TOP ALBERTA MANUFACTURING EXPORTS 1988

Total Exports $4.1 Billion

CHART 5.2

SOURCE: STATISTICS CANADA



frozen products, ethnic foods, condiments and gourmet items. To encourage new ventures, an $8.5 million Food Processing Development Centre near Leduc, Alberta, offers industry world scale laboratories with facilities for product formulation, ingredient assessment and evaluation of food products. Pilot plant equipment simulates industrial production and produces limited runs for test marketing purposes.

# CHEMICALS AND CHEMICAL PRODUCTS

Alberta's chemical and chemical products industry has emerged as the province's second largest manufacturing industry behind food processing. The value of shipments has escalated from just under $610 million in 1978 to $3.3 billion in 1988.

The chemical industry in Alberta consists of three basic segments: petrochemicals and chemical fertilizers, industrial inorganic chemicals, and organic and specialty chemicals.

The petrochemicals industry, by far the largest segment of the chemicals industry, is widely recognized as a major achievement in resource upgrading and economic diversification. Since the mid-1970s, more than $6 billion has been invested in Alberta in developing a world scale natural gas based petrochemical complex. Petrochemicals have also become one of the province's largest exports, amounting to some $1.8 billion in 1988.

Alberta currently accounts for approximately 76% of total Canadian methanol capacity, 75% of Canadian ammonia and solid nitrogen fertilizer capacity, and 58% of Canadian ethylene capacity.

Over the next few years, the petrochemical industry plans investments which could effectively double Alberta's ethylene capacity and related derivative production such as polyethylene, ethylene glycol, and vinyl chloride.

Alberta also produces a number of inorganic and specialty chemicals used in the oil and gas industry, pulp and paper industry, and other industrial markets. Major new investment is also taking place in this sector to supply the expanding forest products industry in Alberta and Western Canada.

*Alberta's chemical industry is leading manufacturing growth*

# PLASTICS PRODUCTS

New investment activity in the downstream plastics processing industry has seen a much larger and more diverse range of plastics products manufactured in Alberta in recent years.

Major inroads have been made in packaging materials. Alberta produces a wide range of products including plastic grocery bags, garbage bags, polyethylene film sheeting for food packaging, and plastic bottles, containers and pails for refined petroleum products, soft drinks, and other consumer products.

Alberta producers also supply products to the construction industry, such as PVC pipe and fittings, styrene foam insulation, fibreglass materials, and other specialty products.

The plastics processing industry is well established in Alberta and is poised for even stronger growth in the future. More than 25 new projects or expansions were undertaken in 1989 representing total new investment of $95 million.

**Alberta's Manufacturing Sector**

- The food and beverage industry remains Alberta's largest manufacturing sector, with 1988 shipments of close to $4.6 billion representing 25% of total Alberta manufacturing shipments.
- Alberta accounts for approximately 76% of total Canadian methanol capacity, 75% of its ammonia and solid nitrogen fertilizer capacity and 58% of its ethylene capacity.

# FOREST PRODUCTS

*Albertans are producing specialty lumber products for export.*

Alberta's forest products industry is composed of four major segments: sawmills (dimensional lumber and boards), panel products (plywood, oriented strandboard, medium density fibreboard), pulp and paper mills, and wood products (doors, windows, trusses, laminated beams, joists, stressed skin panels, treated wood products, pallets, moldings, and cabinets).

More than 12,000 people are directly employed in the forest product industries, and annual shipments were estimated at just under $1.5 billion in 1988.

Applications of new technology in the forestry industry have led to the manufacture of new products such as oriented strandboard and medium density fibreboard, which utilize Alberta's abundant supplies of aspen hardwoods. However, the largest growth component of the forest products sector will be pulp and paper with several major projects currently planned or under construction.

With the development of these projects, the forest products industry is fast becoming one of Alberta's leading manufacturing industries. More than $3.5 billion worth of new investment was planned or underway at the end of 1988. Roughly 10,000 new construction jobs will be created, and more than 5,000 new direct operating jobs.

Alberta companies are also producing a growing range of semi-finished and finished wood products such as aspen furniture, log homes, specialty lumber for export and roofing shakes.

**Alberta's Manufacturing Sector**

- Alberta's forest products manufacturing industry, which had shipments of $1.5 billion and employed 12,000 in 1988, will expand dramatically in the 1990s due to $3.5 billion worth of new forest industry investment.
- Alberta has about 23% of Canada's petroleum refinery capacity.

# METAL AND MACHINERY INDUSTRIES

The metal and machinery industry group in Alberta consists of three major industry segments: primary metals, fabricated metal products, and machinery.

Together they employed about 19,000 workers in 1988 and had industry shipments totalling more than $3 billion. The oil and gas industry represents the major market for Alberta's metal and machinery products, followed by the forest products industry, construction, agriculture and other manufacturing industries.

The three industry segments represent various stages of value added production, ranging from initial metal smelting, refining and extrusion to more sophisticated metal fabrication, and finally complex machinery production. Each industry segment also encompasses a diverse group of firms which differ in size, technology and types of markets served.

Some of the larger firms are also vertically integrated, carrying out more than one stage of production within their plant facilities. Firms such as IPSCO and Stelco fall into this category.

## PRIMARY METALS

The primary metal industry comprises a relatively small number of firms primarily engaged in iron and steel production from recycled scrap metal. Principal products include steel pipe and tube, rolled bar steel products, and primary structural steel shapes and forms.

Steel production is dominated by three large vertically integrated companies – Stelco, IPSCO Inc., and Prudential Steel Inc., a subsidiary of Dofasco – operating a number of plants in Alberta.

Aside from the iron and steel industry, the other major primary metal producer in Alberta is Sherritt. Sherritt produces nickel and nickel alloys, a large proportion of which are exported outside of Canada.

In addition, the Magnesium Company of Canada is commissioning the first phase of a large scale magnesium plant near High River, Alberta in 1990. This will be one of the largest facilities of its kind in Canada, and will utilize the latest technology to produce high quality magnesium.

*The metals and machinery industries are diversifying and finding new markets*

**Alberta's Manufacturing Sector**

- Alberta manufacturers exported $130 million worth of oil and gasfield equipment in 1988.
- Alberta has 250 manufacturers of consumer goods ranging from fashionwear and recreation vehicles to appliances and jewellery.

## METAL FABRICATION

The fabricated metals industry consists of some 450 establishments engaged in fabricating metal into products for use in the oil and gas industry and in forestry, construction and agriculture.

Product areas include metal tanks and pressure vessels, stamped, pressed and coated metal products, prefabricated metal buildings, machine shops, metal valves, fabricated structural products, and heating and air conditioning equipment.

While the oil and gas industry continues to be the major market for metal fabricators, many companies are now diversifying their products and expanding into new markets which will help to stabilize growth in the industry.

## MACHINERY INDUSTRIES

The machinery industry in Alberta has two major components: industrial machinery manufacturers (primarily oil and gasfield equipment) and agricultural implement manufacturers.

Alberta's highly competitive oil and gasfield equipment industry has been able to develop new and innovative products for the oil and gas industry in the areas of exploration equipment, drilling and well service equipment and production equipment such as separators, dehydrators, pressure monitoring systems, agitators, distillers and desanders. Exports of oil and gasfield equipment exceeded $130 million in 1988.

The agricultural implement industry, while relatively small in terms of total output (annual sales of approximately $50 million), has developed a market niche in dryland farming equipment such as tillage equipment, fertilizer applicators and seeding equipment. Roughly one quarter of annual production is exported to the United States

# REFINED PETROLEUM PRODUCTS

[illegible] supply and serve many Alberta industries

Alberta refineries, which supply most of the Western Canadian market (particularly the Prairie Region), make up about 23% of the refining capacity in Canada.

The industry is highly capital intensive, consisting of a total of six refineries in Alberta with a throughput capacity of just under 400,000 barrels per day.

About 80% of the Western Canadian refined petroleum product demand is for transportation fuels (motor gasoline, diesel fuel and aviation fuel). Other products include heating oil, asphalt, petrochemical feedstock, kerosene, lubricants, and other miscellaneous products.

The total value of shipments, which is closely tied to crude oil prices, amounted to $2.7 billion in 1988. Despite continued growth in the volume of output and market share for Alberta refineries, the value of shipments has declined by nearly 50% or $2.4 billion since 1985. This is primarily due to substantially lower crude oil input prices in recent years.

# ELECTRONIC PRODUCTS

The Alberta electronics industry is recognized for its strength in oil and gasfield electronics, telecommunications equipment, office automation equipment and supervisory control and data acquisition systems.

Electronics firms in Alberta serve other industries by supplying products and services that improve their overall effectiveness, efficiency and productivity. This is particularly true in the oil and gas industry, telecommunications, agriculture and computer services.

Given the increasing demand for electronic products and other advanced technology products, the electronics industry offers substantial growth opportunities for companies involved in the development and marketing of innovative products.

A more detailed description of the profile and development of Alberta's electronic product industry is presented in Section 6, which deals with Alberta's advanced technology industries.

# NON-METALLIC MINERAL PRODUCTS

This industry group consists of firms primarily engaged in manufacturing construction materials and products such as cement, concrete products, gypsum products, bricks and other clay products, and fibre insulation materials.

The non-metallic mineral manufacturers employed just over 4,000 people in 1988 and had shipments valued at $571 million.

Given the nature of the products involved, the industry's annual output is closely tied to investment and construction activity in Alberta and Western Canada. Most firms are geared to serving the local domestic market since the relatively high bulk/weight of most products makes it difficult to compete in more distant markets.

[illegible]

## PRINTING AND PUBLISHING

Over the last decade, the printing and publishing industry has grown from a small number of printing firms and one book publishing company to approximately 240 commercial printers and more than 50 book publishers. In 1988, the industry employed 13,000 and had shipments valued at $724 million.

While this industry manufactures a diverse range of products, most firms fit into one of three segments: commercial printers, integrated companies, and book publishers.

The estimated 240 commercial printers make up the majority of all firms in this industry. They supply local businesses with such custom-made items as flyers, brochures, and catalogues as well as business cards, price lists and stationery. As they handle personalized short-term, and mostly local orders, their operations are more similar in many respects to those in the service industries rather than the manufacturing sector.

The integrated companies include mainly newspaper and magazine publishers which print and publish in-house. The newspaper and magazine industry is highly dependent on the performance of retail trade which accounts for the majority of advertising revenue.

Book publishers in Alberta include general trade publishers, children's book publishers, educational houses, plus scholarly and literary houses.

The Alberta printing and publishing industry has a strong local base. Most printing firms satisfy local demand and publish manuscripts originating within the province. However, in recent years, the industry has grown rapidly and the number of out-of-province contracts has been on the rise.

## CONSUMER PRODUCTS

Approximately 250 Alberta firms manufacture consumer products in the following areas:

- sportswear, skiwear, high fashion garments, other clothing and textiles,
- furniture and fixtures and other household products,
- recreation vehicles, boats and other leisure products,
- sporting goods, and
- appliances, jewellery, ceramics and other products.

These industries employed approximately 6,300 in 1988 and had shipments valued at $330 million.

The largest segment is the clothing and fashion sector, which also holds promise for future growth and development, particularly in high fashion exports and mid-to-high-end specialty garment markets in Canada.

# 6 ADVANCED TECHNOLOGY INDUSTRIES

[illegible] and [illegible] support [illegible]

Research and development activities in Alberta have always had a decidedly practical thrust. Albertans early recognized the value of focusing engineering and scientific expertise on resource development – and, as a result, the province today boasts extraction and processing industries which are among the most technologically advanced in the world.

This determination to spur economic growth through the application of science and technology has become a major element of the province's economic diversification strategy, translating into a fast growing community of high technology enterprises which have already begun to lessen the province's dependence on the sale of unprocessed resources.

# ALBERTA'S TECHNOLOGY RESOURSES

Established in many cases to respond to the demands of Alberta's huge domestic resource market, firms specializing in everything from telecommunications, computers, and software to advanced materials, electronics and biotechnology are now expanding both their dimensions and their horizons to supply sophisticated equipment and expertise in a variety of applications to national and international markets.

Supporting this progress is Alberta's impressive collection of scientific resources. Among Canadian provinces, Alberta enjoys one of the highest per capita levels of support for science and technology, with a network of research agencies and organizations designed expressly to assist and encourage the high technology industry. The province's education and training systems increasingly reflect the scientific, engineering, technical and managerial needs of Alberta industry. An effective technology transfer system ensures that achievements in Alberta's university laboratories and research agencies are quickly transformed into innovative commercial products for domestic and exports markets; and an exceptionally high level of government/industry/university cooperation has developed in the province as new opportunities are explored in various high technology fields.

The impact of this emphasis on science and technology is best measured in the roughly 1,000 Alberta firms engaged in technology-intensive activity. In 1989, for example, these firms accounted for total annual revenues of $4.2 billion and a workforce of 50,000.

Despite its relative youth (about 25% of these firms have been established in the past six years), Alberta's advanced technology sector produces well over 3,200 distinct products and technologies and continues to experience dramatic growth not only in the variety of goods it produces, but also in diversity of markets, range of applications, and research capacity

**Alberta's Advanced Technology Sector**

- Approximately 1000 Alberta firms are engaged in technology-intensive activity, with total annual revenues exceeding $4.2 billion.
- The electronics sector is Alberta's largest area of advanced technology activity.
- Alberta companies have developed strong international markets for telecommunications technology, including cellular and SCADA systems.

# ELECTRONICS

[illegible]
[illegible]

The development and application of microelectronics and electronics is one of Alberta's largest areas of advanced technology, employing 16,000 and accounting for total sales of roughly $1.5 billion in 1989. It is also one of the most diverse categories, encompassing telecommunications equipment, test, measurement and control apparatus, subassemblies and subsystems manufacturing, factory and process automation equipment, and an array of products for energy, environment and transportation applications.

Almost half of the industry revenues came from the sale of telecommunications equipment by two major firms. Northern Telecom, a branch operation of one of the world's leading manufacturers of digital telecommunications equipment, serves both national and international markets from Alberta. NovAtel is an Alberta based firm and Canada's only manufacturer of cellular telecommunications equipment. It has not only installed leading edge systems across Canada, but has also gained international recognition and markets for its sophisticated cellular telecommunications technologies.

Other Alberta firms develop and market innovative products ranging from Integrated Services Digital Network (ISDN), protocol testers and microwave landing systems for aircraft to high accuracy satellite receivers used for navigation, and airborne radar systems for ice surveillance and terrain data collection.

Alberta is an acknowledged world leader in the development and application of Supervisory Control and Data Acquisition (SCADA) systems. Spurred by the resource industry's need to gather operating data from remote locations, Alberta's electronics industry has developed sophisticated communication networks involving remote terminal units that relay data to a central unit through radio, telephone or microwave links. Now considered integral to all major industrial applications, Alberta's SCADA technology and products are exported worldwide for use in industries ranging from telecommunications and petrochemicals to water management and transportation.

Of the hundreds of Alberta firms specializing in various aspects of Alberta's rapidly evolving electronics industry, close to 150 are involved in subsystems/subassembly. These firms manufacture products ranging from circuit boards, semiconductors to electronic power supplies and generators, most of which serve as inputs to other advanced technology products.

Other companies manufacture test, measurement and control equipment used primarily by the petroleum industry, while still others develop and market electronic transportation products ranging from traffic control and signalling and simulation equipment to electronic distance measuring equipment.

As a whole, Alberta's electronics industry is notable for its flexibility and resourcefulness, constantly developing innovative products and processes to respond to emerging opportunities in electronics manufacturing and chip design.

**Alberta's Advanced Technology Sector**

- Alberta biotechnology companies are internationally recognized for achievements in fields ranging from agricultural products to pharmaceuticals.
- Alberta has an advanced materials industry producing specialized metals, polymers, additives and modifiers, and industrial coatings.
- Alberta has an extremely well developed advanced technology infrastructure.

# COMPUTER SOFTWARE AND HARDWARE

*The software industry is expanding rapidly*

The Alberta computer manufacturing industry is made up of firms involved in two distinct types of products: computer software packages and computer hardware and peripheral equipment. The more than 200 Alberta firms engaged in computer-related products and services in 1989 accounted for more than $420 million in sales and a workforce of approximately 6,200.

Once regarded as peripheral to the hardware and services industries, the software industry has been the fastest growing segment of the overall computer industry in recent years. In Alberta, it clearly dominates the sector as a whole.

The fact that the computer software industry has an extremely diversified market has allowed both large and small companies to develop and market an increasing array of software products for either general or "niche" clients. In Alberta, the software industry has developed more than 900 types of software packages in four broad product categories: artificial intelligence/expert systems software, industry-specific software, systems software, and non-industry-specific software.

Almost 60% of Alberta's software companies are engaged in non-industry-specific software applications, the majority of their output consisting of general purpose accounting software. Approximately 20% are involved in systems software. In both cases, the percentages are similar to those found in software industries elsewhere.

The level of technical sophistication and diversity of the Alberta software industry is most apparent in industry-specific software. About half of all Alberta software firms are also involved in this field, creating some 300 different types of software packages, primarily for the energy industry.

Alberta firms have also developed dozens of non-industry specific software products for engineering and technical processing, SCADA and other process control uses. Outside the resource sector, Alberta companies have demonstrated expertise in developing packages for the health care and retail sectors.

Alberta firms also produce a comprehensive range of computer hardware products. These include minicomputers, microcomputers and manufacturing process control computers as well as peripheral products such as interface converters, hardcopy graphic output devices and acoustic enclosures.

While computer hardware manufacturing is a relatively small area of activity compared to other advanced technology sectors, it holds great promise in the area of supercomputing. An Edmonton-based company is among world leaders in the development of advanced parallel supercomputing technology. The firm recently completed sales to the U.S. Department of Defence at the Pentagon and to the Canadian Department of National Defence.

# BIOTECHNOLOGY

*Biotechnology is helping diversify agriculture.*

Because of its range of applications, biotechnology is widely recognized as a powerful force for economic diversification and a key technology for future economic growth.

Through close cooperation between the private and public sectors, Alberta has already made significant strides in a field which, in its simplest form, involves the duplication of genetically altered or engineered DNA in "living factories" which closely resemble natural conditions. By utilizing a common family of production processes, Alberta's biotechnology pioneers have demonstrated their ability to create a diverse array of products.

Biotechnological processes have been applied successfully in Alberta in primary industries such as agriculture, animal husbandry and silviculture and in secondary industries such as pharmaceuticals, veterinary medicine, food processing and chemicals. Present developments in biotechnology promise an even wider array of applications and include such areas as electronics, natural resources and waste management.

Biotechnology is a business that was born in university laboratories. Fortunately, Alberta has been in a position to capitalize on a number of promising developments emerging from its universities, which house a talented pool of researchers in various fields of biotechnology. For example, one of Canada's best known molecular biologists is at the University of Calgary; the Group in Protein Structure and Function at the University of Alberta in Edmonton has earned international recognition; and the University of Alberta is deemed to have one of Canada's best departments of biochemistry.

In addition, having identified biotechnology as a major area of economic opportunity for Alberta, the provincial government provides strong support for the industry, both through the universities and the province's specialized biotechnology centres.

The biotechnology industry in Alberta, as elsewhere, is very young. Of the more than 10 companies involved in biotechnology, only one predates 1980 and the majority have been formed since 1985. Most companies remain closely linked with university programs in various aspects of biotechnological research – and, in fact, some of Alberta's more prominent biotechnology companies have been spin-offs of such programs and personnel.

As a whole, Alberta's biotechnology firms accounted for approximately $25 million in sales and a workforce of more than 200 in 1989. Despite their relatively brief history, they have been consistent leaders in areas ranging from livestock genetics to medical and health care products. One Alberta company, for example, holds four of the first five licences for monoclonal antibody blood typing reagents issued by the United States Food and Drug Administration (FDA). The same company also acquired the first ever Japanese Ministry of Health and Welfare licence for monoclonal antibody based serological Anti-A and Anti-B reagents.

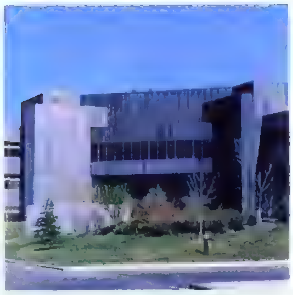
# ADVANCED MATERIALS

The field of advanced materials encompasses the production of an extremely wide array of synthetic and natural compounds. These range from specific refined composites such as ceramics, glasses, laminates, alloys, polymer plastics and fibres to other special materials including corrosion inhibitors, adhesives, coatings, lubricants, and class metals. These products usually serve as inputs to one or a number of specific applications.

In Alberta, these applications have been largely tied to the natural resource sectors, particularly oil and gas. Displaying strong capability in this field, Alberta firms currently produce well over 100 separate advanced materials. Together, these firms accounted for more than $670 million in sales in 1989 and employed more than 10,000.

The Alberta advanced materials industry is concentrated primarily in three areas: polymers, additives and modifiers, and various industrial coatings and coating materials. Activity in each area is largely tied to oil and gas applications. In another specialty area, one Alberta company has gained distinction for advanced metal materials based on wet process recovery of non-ferrous metals from ores, concentrates and sulfide mixtures formed in the smelting process.

Alberta's capabilities in advanced materials research has been strengthened further by the recent establishment of the industry-led WESTAIM initiative, the first Advanced Industrial Materials Research Centre in Western Canada.



*Alberta Research Council, Calgary*

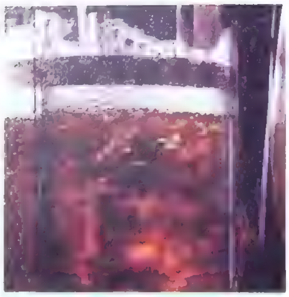
# INFRASTRUCTURE SUPPORT

Alberta's efforts to encourage and attract technology-intensive companies in a highly competitive North American market are second to none – and the results are visible in a promising base of young, innovative Alberta companies across the entire spectrum of advanced technology activity.

Key "building block" institutions and/or research centres have been established, which support the efforts of Alberta firms and researchers to develop and commercialize promising technologies. Provincial government support for these institutions and programs recognizes the importance of building upon Alberta's unique strengths in specific areas of advanced technology activity, while complementing those areas in which companies are striving to become more competitive.

The Alberta Research Council (ARC), for example, offers a number of specialized testing and analytical services in such areas as polymers, chemicals, fuels and forest products and works closely with industry on a cost-of-service basis. Through its Advanced Technologies Program, ARC also undertakes contract research and development for external clients in the areas of artificial intelligence, distribution systems and robotics and, in these and other areas, transfers technology to small and medium sized businesses through its Joint Research Venture Program.

A 37,500 litre biotechnology pilot plant operated by ARC provides scale-up and process development to pre-production levels for biotechnology companies seeking product development assistance. Now in its third year of operation, the pilot plant has attracted national and international attention, and is considered one of the finest facilities of its type in North America. A 7,500-litre fermenter, a 1,500-litre fermenter and a series of smaller units offer flexibility in pilot-scale work, while a 15,000-litre fermenter, supported by its own downstream processing and related equipment, facilitates product development.


*Fermenter at the Alberta Research Council*

For firms involved in the development of electronic products, the Electronics Test Centre (ETC) at the Alberta Research Council, offers evaluation, testing and consultation services to meet Canadian and international standards. A major component of the National Standards System in Canada, ETC participates in all areas of the electronics and telecommunications industries for both military and commercial clients.

The Alberta Microelectronic Centre (AMC) was established in 1982 to promote and enhance the application of microelectronic technology to Alberta industry. AMC assists companies interested in developing microelectronic capabilities by providing a range of technology transfer, contract development and production, training, and industrial assistance services.

For technology-intensive firms developing telecommunications technologies, the Alberta Telecommunications Research Centre (ATRC) offers an excellent arena for entering into collaborative research projects with researchers from Alberta's universities and other firms.

Among other facilities offering services in support of business are The Centre for Frontier Engineering Research (C-FER), a collaborative research facility which addresses problems related to the safe and economical development of Canada's resources under cold weather conditions, the Cyber 205 Supercomputer at the University of Calgary, and the Alberta LASER Institute at the University of Alberta. 🟩

# CENTRES OF ADVANCED TECHNOLOGY

The goal of accelerating the development of Alberta's advanced technology community has been translated into a number of positive actions. These include establishing the provincial government Department of Technology, Research & Telecommunications, opening research and development parks in Edmonton and Calgary, and creating a number of facilities.

**Alberta Research Council (ARC)** - established in 1921, ARC was Canada's first provincial research council, and for more than six decades has undertaken a broad range of research activities to further economic growth through the development of the Province's resources. A Crown corporation, ARC works closely with industry, providing research capabilities not available through the private sector.

**Biotechnology Pilot Plant (operated by the Alberta Research Council)** - assists industry to commercialize biotechnology processes through the scale-up of laboratory research production. The first of its kind in Canada, the 37,500 litre fermentation facility gives Alberta firms a competitive edge in bringing new biotechnology products to world markets.

**Electronics Test Centre** - the only facility of its kind in Western Canada, the Centre expedites the development of new electronics products by providing testing and evaluation services. Accredited by national and international certification agencies, the Centre evaluates telecommunications, medical, data processing, office automation and process instrumentation products to required military, government and commercial standards.

**Alberta Microelectronic Centre** - assists industry in applying microelectronic technology to production methods through consulting services and feasibility studies, prototype development, technology assessment, application-specific integrated circuit design and fabrication, and sensor research and development.

**Centre of Environmental and Waste Management Expertise** - offers expertise related to every component of environmental and waste protection systems, providing solutions which conform to internationally recognized standards of quality and reliability. The Centre also has an interest in promoting Alberta's environmental and waste management expertise and coordinating research and development projects directed at optimal environmental protection and monitoring results.

**Alberta Telecommunications Research Centre** - brings together the research interests and capabilities of industry, university and government participants in collaborative areas of mutual interest. Participating industry sponsors have access to extensive computing and simulating resources as well as processes, systems and patents developed by the Centre. Facilities are used for joint research in such areas as network access, transmission, core network and circuit techniques.

**Alberta Laser Institute** - oriented toward the industrial application of laser technology, the Institute assists the private sector by providing laser technology services on a contract basis. It also offers expertise in feasibility studies, engineering design, training and education, and conducts research in lasers and robotics.

**Supercomputer Centre** - located at the University of Calgary, the Centre offers the capabilities of a Cyber 205 on a time-share basis to companies involved in research-intensive development projects.

**Centre for Frontier Engineering Research (C-FER)** - conducts research related to materials, design and construction for harsh climatic conditions in Arctic and offshore resource development.

# 7 CONSTRUCTION INDUSTRY

Alberta consistently has the highest per capita level of construction in Canada

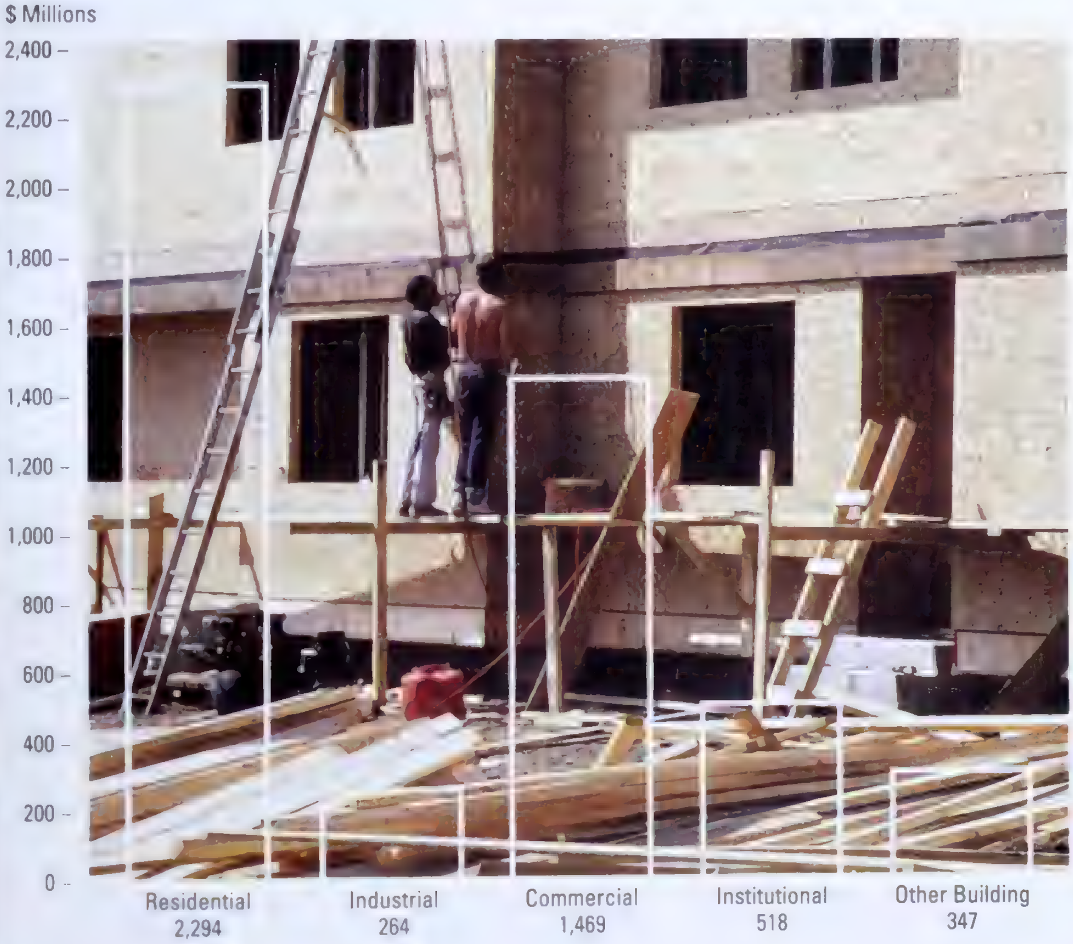
Alberta's large and diversified construction industry has traditionally played an important role in the economy. With less than 10% of the national population, for example, Alberta has accounted for 14% of all Canadian construction volume in recent years and more than 20% at the beginning of the 1980s. With the high level of capital investment and resource-led activity, roughly one in every 14 Albertans in the labour force is involved in some aspect of construction, which generates significant spin-off benefits for other sectors of the economy.

With construction values for 1988 at close to $12 billion, Alberta had the highest per capita construction rate in Canada.

Alberta's multifaceted construction industry builds a wide range of residential, commercial, industrial and institutional structures, produces some of the country's most sophisticated manufacturing and resource processing facilities, and provides the public infrastructure needed by an expanding and technologically advancing society.

**Alberta's Construction Industry**

- Alberta consistently has the highest per capita level of construction activity in Canada.
- The value of Alberta construction work purchased in 1988 was approximately $12 billion.



VALUE OF BUILDING CONSTRUCTION WORK PURCHASED IN ALBERTA, 1988

CHART 7.1A

SOURCE: STATISTICS CANADA

- The construction industry employs up to 7% of Alberta's labour force and has wide-ranging expertise in building construction, industrial and heavy engineering contracting and specialized trade contracting services.
- Approximately 60% of construction activity in Alberta relates to commercial and industrial facilities, power plants and gas and oil facilities.

The Alberta industry includes firms engaged in the development and general construction of buildings, industrial and heavy engineering contracting, and specialized trade contracting services as components of complete projects. Consistent with the national pattern, a relatively small number of contractors account for a significant share of industry revenues.

Alberta's wide-ranging engineering and construction expertise is reflected in such projects as West Edmonton Mall, the world's largest covered shopping complex, and in Calgary's collection of spectacular sports facilities. Built to house the Olympic Games, they now serve as models for similar facilities elsewhere in the world. Alberta firms played a key role in the construction of the Syncrude Canada Ltd. plant, the world's largest oil sands mining and processing complex – and, in a remarkably short time, produced the housing and infrastructure that transformed the oil sands community of Fort McMurray from a small town into a thriving city of 35,000.

Elsewhere in the province, projects ranging from huge coal-fired generating plants, dams and irrigation networks and sleek urban office towers to some of Canada's largest and most advanced research facilities all attest to the engineering and construction skills of Alberta contractors.

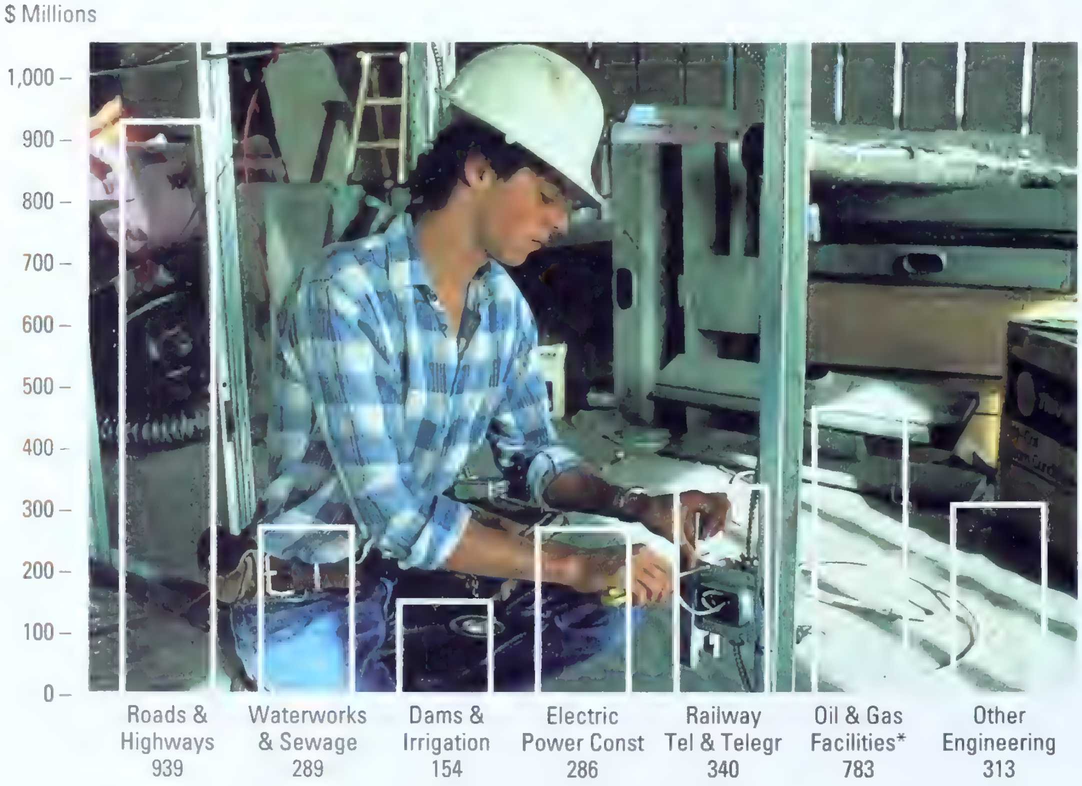
Government at all levels is responsible for roughly 15% to 20% of Alberta's construction activity, largely in institutional developments such as schools and hospitals, transportation systems, local utility services, and recreation and cultural facilities. Residential construction accounts for a similar share. The balance relates to commercial and industrial facilities, power generating plants, and gas and oil facilities.

Building construction, which encompasses residential, industrial, commercial and institutional development, accounts for just over 40% of total industry activity.

VALUE OF ENGINEERING CONSTRUCTION WORK PURCHASED IN ALBERTA, 1988

CHART 7.1B

SOURCE: STATISTICS CANADA



* Excludes oil and gas drilling activity which amounted to $3,938 million

In the engineering construction segment of the industry, oil and gas facilities, including oil and gas wells, make up the largest share of activity. Other major areas include roads and highways, water and sewer systems and electric power generating facilities.

Construction expenditures are roughly evenly divided between urban and rural Alberta. While much of the building construction in the province is naturally concentrated in the larger urban centres, the major share of engineering construction, apart from street, waterworks and sewage system construction, occurs in the rural areas.

Construction expenditures are made up in part by public and private investment and, as a result, are influenced by such factors as consumer and industry confidence, industry-specific economic conditions, and public sector fiscal programs. The industry in Alberta remains sensitive to circumstances in the resource sectors, and in particular in the oil and gas industry. Energy investment has a significant impact, both directly and indirectly, on the level of construction activity in Alberta.

Between 1971 and 1981, the annual value of construction rose from $1.8 billion to $14.5 billion. During this period, Alberta's construction industry underwent marked expansion in terms of size and capability, demonstrating its ability to handle engineering, procurement, construction and management functions for a broad range of contracts.

While recession in the early 1980s resulted in considerable industry rationalization, Alberta firms gained new efficiency and productivity. Since the mid-1980s, the industry has undergone significant recovery and is optimistic about future prospects.

New forestry developments are currently benefiting the industry with some $3.5 billion commited to forest-based projects in northern Alberta. This will spark activity in both plant construction and related infrastructure well into the 1990s. In addition, several major industrial and resource projects already announced or on the immediate horizon include the $1.4 billion Husky heavy oil upgrader and production facilities at Lloydminster, and some $1.8 billion in petrochemical and industrial chemical projects. ■

*Prospects for the construction industry are bright*

# 8 SERVICE INDUSTRIES

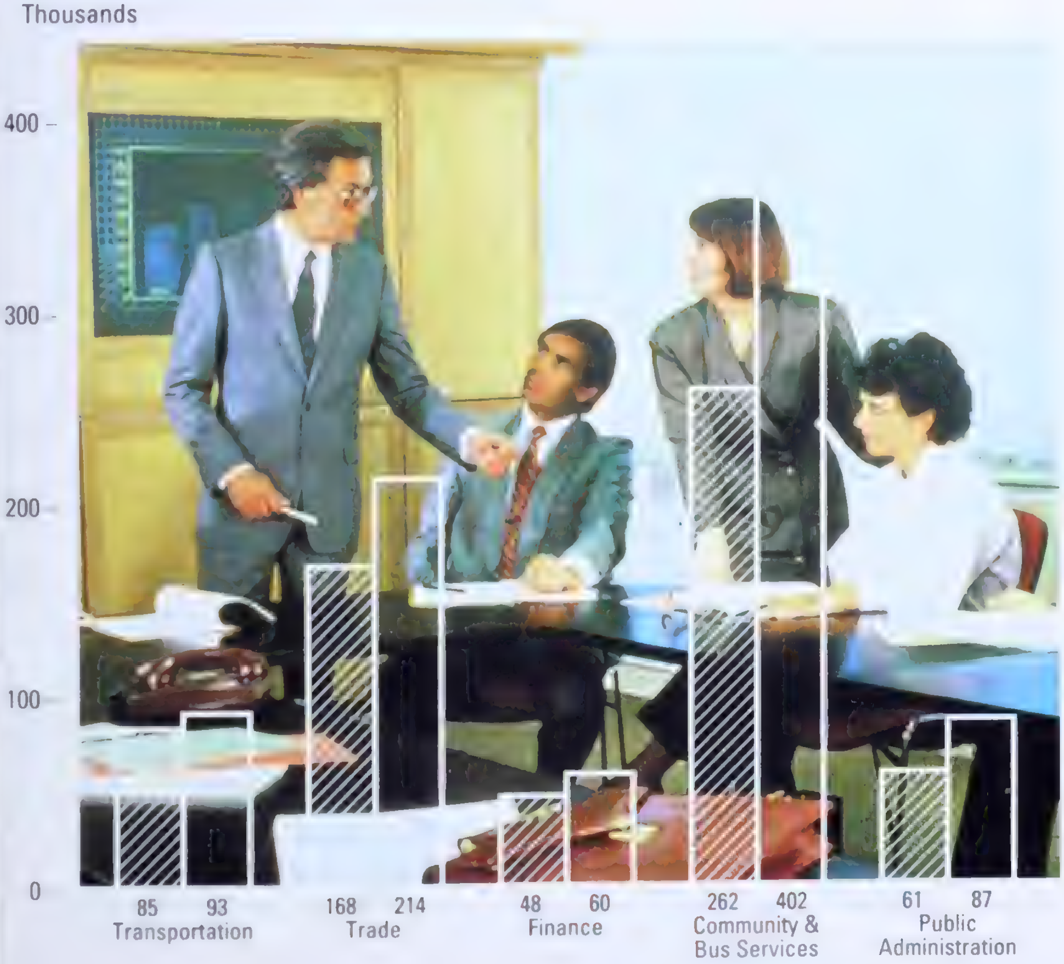
Service industries lead in the creation of new jobs in Alberta

The high visibility of Alberta's goods-producing sector – agriculture, oil and gas, forestry, mining, and manufacturing – has tended to obscure the growing importance of the service sector. Service industries now account for 60% of Alberta's Gross Domestic Product. Over the past decade, services have generated eight out of every 10 new jobs in Alberta.

The service sector embraces a wide range of industries, including transportation and communications, wholesale and retail trade, financial services, business services, education, health care, accommodation, food, beverage and tourism services, and public administration. Within these industries are services that are sold commercially in the market and, as well, so-called "non-market" services provided by non-profit and publicly funded organizations. Many services – perhaps one third of the total – are purchased by other businesses as inputs to their activities, while the remainder are purchased or consumed by final users.

**Alberta's Service Sector**

- Over the past decade, the service industries have generated 80% of all new jobs in Alberta.
- Business services, which employ 64,000, represent one of the fastest growing segments of the service sector in Alberta.



EMPLOYMENT
IN ALBERTA
SERVICE
SECTOR

1978 ▨
Total: 624,000
1988 🟦
Total: 856,000

CHART 8.1

SOURCE: STATISTICS CANADA

*The vitality of the service sector will ensure long term growth*

**Alberta's Service Sector**

- Alberta's trade sector (wholesale and retail firms) employs more than 200,000 and accounts for 9% of provincial GDP.
- Tourism services in Alberta generated $2.3 billion in revenues in 1988 and supported more than 75,000 full-time jobs.

Service industries perform wide ranging roles in the Alberta economy. They provide complementary and specialized support to both goods-producing and other service businesses. In an increasingly knowledge and information based economy, many services are involved in the creation, production, storage, interpretation, and transmission of information. Education services are crucial to the development of Alberta's most important strategic resource – its human capital. Recreation, cultural, health care and social services enrich the quality of Alberta life and contribute to healthy and productive lives. At the same time, many business, education, transportation and other services are exported, providing new sources of income and employment for the province.

Tourism is a major service industry and one that represents a strategic area of development and opportunity for Alberta. The province is well served in this regard, with a host of hospitality, recreation, cultural, transportation, retail and personal services catering to the visitor market.

In Alberta, it is widely recognized that the competitiveness, vitality and innovative spirit of the service sector will contribute significantly to the long-term growth and development of the province.

# BUSINESS SERVICES

Business services represent one of the fastest growing segments of the service sector in Alberta, employing 64,000 workers or more than 5% of the provincial workforce.

Services provided by the business services industry, which includes engineering, architectural, legal, computer, accounting, employment, advertising, management consulting and other types of service establishments, are largely purchased by other businesses and by government. The growth of Alberta business services reflects both the increasing complexities of business operations, which have created demand for outside specialist services, and the general growth of the provincial economy. As well, a change in business/government philosophy in Alberta in recent years has seen services increasingly purchased from outside sources rather than performed by in-house divisions of government and business.

Engineering and architectural services together represent the largest component of the business services industry. These services are sensitive to investment and construction levels. Following considerable growth during the 1970s, many firms were forced to downsize in the mid-1980s when construction levels declined and a number of planned resource projects were cancelled or delayed. The industry has responded to the reduced activity in a number of ways – by providing more specialized services and by adding professional and technical capabilities to serve new markets, and through the consolidation of existing businesses. Engineering firms in particular have successfully pursued export opportunities abroad, where they have focused on their particular strengths and experience in petroleum and natural gas technology, municipal engineering and environmental technologies.

Approximately 400 firms in the province offer services in the areas of computer software development and systems analysis, data entry and processing, and computer leasing, time sharing and maintenance. This dynamic and rapidly growing industry provides services to the many businesses now expanding their use of computer technology for information handling, analysis and operational control. The computer industry has universal dimensions and a number of Alberta firms have established an export market for their services and software products.

Management consulting firms provide information, advice and assistance to private and public sector organizations. Growth of the industry has been fueled in large part by the increasing complexity of business management and competition in the marketplace, and by the demand from organizations for more and better information upon which to base decisions. The province's management consulting sector, which employs more than 3,000, contributes to the improved economic efficiency and competitiveness of Alberta's industries.

Advertising services have been the fastest growing of all business services in recent years. During the three-year period 1984 to 1987, employment in this industry more than doubled to almost 5,000. An increasingly market-driven economy, the introduction of many new products and services vying for the consumer dollar, the advent of new media alternatives, and the need to respond to particular market niches and changing consumer preferences have all contributed to an increasing use of market research, advertising and promotion. The advertising industry, which is very much a part of this increasingly competitive economy, provides specialized services in these areas.

Other business services include accounting, legal and employment services. The increasing number of business, taxation and legal issues that affect business activities has encouraged many organizations to utilize the services of qualified business service firms.

*Bankers' Hall, Calgary*

**Alberta's Service Sector**

- Alberta offers a multitude of attractions and activities for visitors in both breathtaking natural surroundings and dynamic cosmopolitan cities.
- Entertainment, recreation and cultural services employ more than 16,000 people in Alberta, which is renowned for a year-round schedule of festivals and cultural events and unsurpassed recreation opportunities.

# FINANCIAL SERVICES

The financial services industry in Alberta includes establishments such as banks, trust companies, Treasury Branches and credit unions, all of which accept deposits; consumer and business financing and investment intermediaries; and insurance companies and agencies The industry employs 60,000 people, or 5% of the provincial workforce, and contributes about 16% of Alberta's GDP.

The financial services industry is well represented in the province. Seven Schedule A and 13 Schedule B banks operate from a total of 734 bank branches. Schedule A banks are widely held, domestically owned institutions in which no single owner may hold more than 10% of voting stock. In contrast, Schedule B banks are usually 100% owned by foreign parent banks

Alberta also has 44 trust companies (five incorporated in the province), 46 securities firms which are Alberta Stock Exchange members, and 350 insurance agencies. There are also six registered extraprovincial insurance companies incorporated which offer insurance services to the general public in Alberta.

The Province of Alberta Treasury Branches, owned and operated by the provincial government, have continued to expand, increasing their branches and agencies from 205 to 248 between 1980 and 1988. Offering an alternative to banks, the Alberta Treasury Branches continue to demonstrate their value to local businesses, farmers and consumers, because of their broad geographic distribution throughout the province, their presence in many smaller communities and their responsive lending policies . Assets have grown from $4 billion in 1985 to $6.8 billion at March 31, 1989.

[illegible]

Credit unions also play an important role in Alberta's financial services sector. Currently, there are about 100 credit unions in Alberta with total assets of $2.9 billion and total deposits of approximately $2.5 billion.

Venture capital firms are playing an increasing role in providing financing for new and growing companies. Of 16 venture capital organizations based in the province, the largest is Vencap Equities Alberta Ltd. Representing a blend of public and private investment, Vencap reflects Alberta's free enterprise philosophy and encourages entrepreneurial activity. In its first five years of operation, Vencap invested a total of $113 million in more than 30 companies.

Deregulation and legislative reform are significantly altering the structure and intensifying the competitiveness of the financial services industry in Alberta and the rest of Canada. For example, Canada's largest banks have established a significant presence in the securities industry and the number of foreign owned financial institutions may further increase under provisions of the Canada/U.S. Free Trade Agreement. Recently, new credit union legislation was passed in Alberta and legislation respecting trust corporations is being developed in Alberta in conjunction with developments in the trust sector elsewhere in Canada.

In Alberta, both the economic downturn of the early 1980s and subsequent recovery have had an impact on Alberta's financial industry. The consolidation and rationalization that have occurred in recent years, however, have resulted in a more efficient financial services sector in Alberta.

## WHOLESALE AND RETAIL TRADE

The trade sector, which includes both wholesale and retail firms, employs more than 200,000 people in Alberta (almost 17% of Alberta's workforce) and accounts for 9% of provincial GDP. The wholesale industry comprises firms that purchase merchandise for resale to other businesses, while retailers purchase commodities for subsequent sale to the general public. A significant share of business and household expenditures flows through the trade sector and distribution costs account for an important part of the final price of most products.

The industry plays an important role in the timely and efficient distribution of the immense range and variety of products required by businesses and individuals.

The Alberta wholesale trade industry includes more than 6,000 businesses whose total volume of business exceeds $22 billion per year. Major categories of wholesale trade in the province include petroleum products, food, machinery, farm products, lumber and building materials, and motor vehicles, which together account for 76% of industry volume. Employment growth in wholesaling has been slow due to productivity improvements and structural shifts, which in many cases have seen retail establishments take over the role of the wholesale distributor.

Vertical integration is common in a number of wholesaling subsectors, including the petroleum, machinery and food products areas. Electronic data interchange between manufacturers, wholesalers and retailers is becoming more widely adopted as the industry strives to reduce inventories and increase its ability to respond quickly to customer orders. In some product areas, the line between wholesale and retail functions is becoming blurred as these functions become more integrated.

Alberta's retail industry consists of more than 13,000 businesses, employs 153,000 workers and participates in a market that consistently produces among the highest per capita retail sales in Canada. The value of retail trade in Alberta reached nearly $16 billion in 1988. The automotive, food and drug, and general merchandise groups account for 73% of retail trade, with apparel, household furnishings and appliances, and miscellaneous other categories accounting for the remainder of sales.

Industry volume is tied to the level of personal income, which, in turn, is related to general economic conditions, population, and employment conditions. Other factors such as consumer confidence, credit costs, and credit availability also influence retail spending.

Retail activity is concentrated in the province's urban centres. Alberta's 15 cities account for three quarters of industry volume and Calgary and Edmonton alone account for three fifths of provincial retail expenditures.

Market shifts in the retail sector have favoured specialty chain stores while general department stores have lost market share. Independent retailers continue to account for more than 50% of retail volume, but their market share is also falling.

The provincial retail sector has been marked by trends toward increased competition, lower margins, and greater market segmentation and specialization. The emergence of two-income households has affected lifestyles and retail purchasing patterns. Retailers have responded to the various needs and preferences of consumers with strategies such as providing late night and Sunday shopping, offering personalized service, and specializing in particular product areas. Increasing use of point-of-sale computer and inventory control systems allows the industry to monitor and respond quickly to changes in consumer demands.

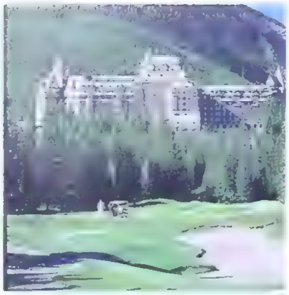
The industry plays an important role in the province's tourism development since shopping is one of the most common visitor activities. Indeed, major retail complexes such as West Edmonton Mall, North America's largest shopping centre integrating retail, recreation and entertainment facilities, serve as tourist attractions in their own right.

*Tourism is a focal point for Alberta's [illegible]*

# TOURISM SERVICES

Tourism is one of the largest and fastest growing industries in the world. It represents an important part of the Alberta economy and a focal point for future growth in the province. In 1988, tourism generated an estimated $2.3 billion in revenues and supported approximately 75,000 full-time jobs.

The province offers a multitude of attractions and activities for visitors. Highlights include the spectacular Rocky Mountains, offering excellent skiing in winter and three beautiful national parks – Banff, Jasper and Waterton; a network of provincial parks and wilderness areas; and rich deposits of dinosaur fossils which can be viewed both at Dinosaur Provincial Park (a World Heritage site with geologically unique badland formations) and at Drumheller's Tyrrell Museum of Palaeontology.



*Banff Springs Hotel*

Visitors are drawn as well by the beauty and solitude of Alberta's north country, with its excellent fishing, and by the province's two major cities, Calgary and Edmonton, both dynamic cosmopolitan centres with unique urban attractions.

For the vacationer with a sense of adventure, Alberta offers an array of choices including trail rides on horseback, fly-in fishing at remote lakes, hot air ballooning, river rafting and winter dogsled tours.

Alberta is also known for major events. In addition to the annual Calgary Stampede and Edmonton Klondike Days, Alberta has hosted two major international events in recent years: the World University Games and the XV Olympic Winter Games.

The benefits of tourism extend throughout the provincial economy. Many large and small businesses distributed across the province serve the travelling public. Airlines, hotels, restaurants, taxicabs, ski resorts, gas stations, grocery stores, golf courses, guides and outfitters, convention services and facilities – these are just a few of the businesses that benefit from tourism.

As might be expected, Albertans constitute the largest group of tourists, accounting for 46.5% of total tourist revenues in 1988. Residents of other Canadian provinces accounted for 29.5% of total revenues, U.S. residents for 16%, and other foreign visitors, mainly from Western Europe and Japan, for the remaining 8% of revenues.

The development potential of tourism in the province is extremely promising. In recent years many private and public initiatives have been announced to upgrade and expand tourism facilities and services, improve industry service standards and training, increase tourism research and market promotion, and improve the industry's capacity to serve the business and vacation traveller. Two major initiatives are under way to develop tourism at the community level: the Community Tourism Action Program and the Team Tourism Marketing Program. A total of $50 million has been invested by the Government of Alberta in these two initiatives.

With the rapid growth in international travel, the tourism sector is expected to enjoy continued strong growth in the 1990's. Tourism offers an increasingly important opportunity for economic diversification for the province, which will enhance broad visitor appeal during all seasons of the year.

# ENTERTAINMENT, RECREATION AND CULTURAL SERVICES

*Calgary Stampede*

Entertainment, recreation and cultural services employ more than 16,000 people in Alberta. The industry encompasses motion picture, audio and video production and distribution, theatrical and staged entertainment, commercial spectator sports, sports and recreation clubs and services, and various other elements ranging from agricultural fairs to hockey schools and planetariums.

There are an estimated 40 production companies and distributors in Alberta in the film and video industry. In addition, foreign and out-of-province film makers, attracted in part by the province's unique and picturesque landscape, regularly produce motion pictures and videos in Alberta. The industry is actively supported by the Alberta Motion Picture Development Corporation.

The range and quality of the province's entertainment, recreation and cultural services play a growing economic role in retaining and attracting the educated and skilled labour force required by industry in Alberta. Available entertainment, recreation and cultural service amenities have also been factors in the location of new research and industrial facilities in the province.

The entertainment, recreation and cultural industry is also an important part of Alberta's expanding tourism industry. Professional sports franchises in Calgary and Edmonton, the Calgary Stampede and Edmonton Klondike Days events, the province's mountain skiing facilities, music and theatre festivals, local rodeos and fairs, golf and country clubs – these are some of the elements of a large and multi-faceted recreation industry.

The industry contributes significantly to the quality of life and physical and mental health of Albertans. Its growth has reflected not only the increase in individuals' leisure time but also a general lifestyle change toward more active involvement in recreation. ■

# 9 PROVINCIAL INFRASTRUCTURE

A solid infrastructure supports Alberta industry

Alberta has developed an extensive infrastructure in transportation, communications, health and education – all of which are essential to economic growth and diversification. The province's infrastructure has acted as a catalyst for development providing an important link between Alberta and the rest of the world.

# TRANSPORTATION

The Western Canadian market of approximately 7.5 million people is growing rapidly. Alberta's excellent rail, highway and air transportation systems and services provide efficient and cost-effective access to this market base, and positions Alberta to serve California and other important markets in the United States.

Alberta companies have already been successful in tapping U.S. markets – and, under the Free Trade Agreement, many new opportunities will emerge. Direct highway links to the U.S. interstate system, pipeline connections, air routes to major western U.S. centres, plus rail interchanges with American railroads all help to service this north-south trade.

Alberta firms are also active in world markets, using the combination of rail or road to the Pacific Coast and marine transport from extensive and high quality port facilities along the West Coast.

Alberta's domestic trade is well serviced by two national east-west highways (the Trans-Canada and Yellowhead routes), the Canadian Pacific and the Canadian National railways, and three of the top 10 airports in Canada in terms of passengers handled. Pipelines provide low-cost access to markets east and west, as well as to the south. Intermodal facilities, particularly Alberta Intermodal Services Ltd. (AIS), respond to the needs of exporters and importers. AIS was established by the Government of Alberta to provide Alberta shippers with access to container shipments at volume-related rates.

Several major infrastructure projects are under way or recently completed. Highway capacity is being expanded through twinning of the Yellowhead Highway, for example, and North America's longest railway tunnel has just been completed on the CP route to the Pacific Coast. In the air transportation sector, the new Calgary International Airport terminal, completed in the early 1980s, is currently undergoing expansion. Although ocean ports are outside the province, they are a key element in the transportation system servicing Alberta. Financial assistance has been extended for facilities at Prince Rupert and is being provided for the improvement of other ports which act as the province's gateways to the Pacific Rim.

Trucking services (with the exception of safety regulations) are deregulated in Alberta and this has contributed to an efficient and cost-effective industry. At the same time, Alberta is taking steps to lessen or remove other transportation barriers to cost-efficient trade.

The Alberta Department of Economic Development and Trade provides technical support to firms requiring assistance in moving their product in a more cost-effective manner.

The cumulative effect of these developments in the transportation sector is reflected in the growing volumes of Alberta products reaching domestic, U.S. and overseas markets.

**Alberta's Transportation System**

- Alberta is ideally located to provide access to markets in Western Canada and many parts of the United States.
- Alberta has a highly developed transportation infrastructure which includes extensive road and rail systems linked to all parts of Canada and the United States and excellent air service to both Canadian and international destinations.

# HIGHWAYS

*Alberta highways tie the province to Canada's 'coast-to-coast' system*

**Alberta's Transportation System**

- Alberta has streamlined access to international markets by supporting construction of large and sophisticated West Coast grain handling facilities and port improvements, and by developing innovative intermodal and bulk commodity handling systems connecting to tidewater.
- Alberta has almost 20,000 km of paved rural roads and highways, with both the Yellowhead and Trans-Canada highways forming part of a major coast-to-coast network.

Alberta's economic well-being has always been closely linked with developments in transportation systems. Growth in interprovincial and intraprovincial highways has played a significant part in economic development and in transforming the lifestyles of Albertans.

Alberta has almost 20,000 km of paved rural roads and highways and both the provincial and municipal governments have ongoing highway upgrading programs. Excellent arterial roads and highways link similar main highways in the adjacent provinces of British Columbia and Saskatchewan, and to the south in the United States. The Trans-Canada Highway (through Calgary) and the Yellowhead Highway (through Edmonton) are part of Canada's "coast-to-coast" highway system.

The Alberta Department of Transportation and Utilities is responsible for building and maintaining the primary highway systems. Local and municipal governments are responsible for the construction and maintenance of district roads connecting rural areas with service centres and main highways. The province provides roads where there is no local government.

The provincial government contributes financially to the costs of secondary roads in rural areas and of approved arterial thoroughfares in urban areas. However, administration and operation remain with the local governments.

Resource development in more remote areas of the province has been encouraged by the construction of highways to centres such as Fort McMurray, Grande Cache and the Cadomin and Luscar coalfields. Forestry roads cross the roughly 55% of the province which is covered by forest, providing easy access to timber and other resources.

Alberta's well developed highway infrastructure is due not only to the opening of new routes but also to continuing maintenance and upgrading of the existing system, which allow it to respond to changing demands.

In 1988, more than 2.1 million vehicles were registered in Alberta, including 510,000 trucks and over a million passenger cars.

In Alberta, the trucking industry is deregulated, excluding safety regulations. This has created a competitive environment which gives Alberta shippers access to a trucking industry which is one of the most cost-effective in North America.

For-hire trucking accounts for about 50% of total trucking cargo flow. Intermodal transportation facilities are used extensively by both shippers and carriers on long haul and import/export travel routes.

The present highway infrastructure permits the trucking industry to take full advantage of new equipment technology such as "doubles" (two trailers hauled by a single truck) in order to maximize equipment utilization and achieve lower unit costs. Highway axle weight control provides benefits to all carriers through simplification and standardization of regulation and through reduced deterioration of the highway network.

Several privately owned bus companies operate an unusually detailed system of bus routes in the province. Their services link cities and provide freight, parcel and passenger services to many smaller communities. Approximately 2 million passengers are carried annually. Greyhound Lines serve the Calgary-Edmonton corridor, the Trans-Canada route through Calgary, the Yellowhead route through Edmonton, the Calgary-Lethbridge corridor, and several other routes, primarily south of

Calgary. Coachways System, a Greyhound subsidiary, operates an extensive network of services between Edmonton and points in central and northern Alberta. Major routes are Edmonton-Grande Prairie, Edmonton-Fort McMurray, and Edmonton-Cold Lake. Pacific Western Transportation operates "Red Arrow" luxury bus services on two routes: Calgary-Red Deer-Edmonton and Edmonton-Fort McMurray.

## AVIATION

Aviation services have played a major role in the development of the provincial economy. Supporting this role are approximately 80 licensed airports, 28 heliports and 8 seaplane bases, in addition to more than 800 unlicensed airports. Calgary and Edmonton International airports accommodate both domestic and international services and provide facilities for pre-clearing U.S. Customs.

Air services have expanded significantly in the last decade, with passenger traffic at the three major airports (Edmonton International, Edmonton Municipal and Calgary International) totalling 7.6 million in 1988. Air freight at the three major airports totalled 54.8 million kg.

Alberta enjoys a high level of scheduled air service. Air Canada and Canadian Airlines International provide transcontinental domestic service with both wide-body and narrow-body jet aircraft.

Regional service to B.C., the Prairies, the Yukon and Northwest Territories is provided by Canadian, Time Air, Air B.C. and NWT Air. Time Air serves as a feeder for Canadian, while Air B.C. is a feeder for Air Canada. Modern aircraft such as the Dash 8 and BA-146 are operated on many of these regional routes.

Alberta also has strong international air links. Scheduled direct service to the United States is provided by Air Canada, American Airlines, America West, Canadian, Delta Airlines, Northwest Airlines and United Airlines. These services are provided to Spokane, San Francisco, Los Angeles, Las Vegas, Salt Lake City, Denver, Houston, Dallas/Fort Worth, Minneapolis/St. Paul, Chicago, New York, Phoenix and Cleveland. Scheduled direct service to the United Kingdom, West Germany, Italy and the Netherlands is provided by Air Canada, Canadian Airlines International and KLM.

Air Canada and Canadian are active in both the domestic and international charter markets.

Cargolux and Air Canada offer world-wide dedicated freighter service and transcontinental service while other airlines carry cargo in the bellyhold of their passenger aircraft. Small parcel express services are provided by Purolator, Loomis, Federal Express, Emery, United Parcel Service and other companies.

Alberta has several commercial air carriers providing charter and specialized services. Corporate aviation also plays an important role. Many companies have expertise in meeting the unique needs of the oil and gas industry.

The aviation industry in Alberta has a promising future. Air travel is rebounding following the recession of the early 1980s and recent changes in the regulatory structure have given the air carriers greater flexibility to respond to market conditions. At the same time, local groups in both Edmonton and Calgary are negotiating with the federal government to take over control of airports in these cities. Facilities are to be operated in an entrepreneurial fashion designed to foster and support economic development. As the economy of Alberta matures and its base diversifies, air services will play an even more important role.

*Calgary International Airport*

**Alberta's Transportation System**

- Three of Alberta's modern airports (the Edmonton International, Calgary International and Edmonton Municipal) rank among the top 10 airports in Canada in volume of passenger traffic.
- Canada's two major railroads, CN and CP, have launched extensive capacity expansions in Western Canada in recent years, improving service and enhancing Alberta's access to markets.

# RAILWAYS

*Railways enable efficient shipment of bulk commodities*

For more than a century the railways have been an essential element of economic growth in Alberta. CP Rail primarily serves southern Alberta while CN Rail serves the central and northern parts of the province.

Resource development in Alberta has also necessitated the establishment of regional rail lines. In 1986, CN Rail sold its 106 mile long Stettler subdivision in central Alberta to a new short line rail company called Central Western Railway (CWR). CWR hauls primarily grain to an interchange point with CN Rail at Ferlow Junction. The Alberta Resources Railway, owned by the Government of Alberta and operated by CN, was completed in 1969. It was conceived primarily to accelerate development of natural resources, including coking coal, pulpwood, timber, petroleum, and sulphur in the area lying north of Hinton and south of the Peace River block. About 1 million tonnes of grain and up to 2 million tonnes of coal now move annually over the Alberta Resources Railway to Japanese and other overseas markets.

In 1969 CN, with federal government financial assistance, completed a railway line to Hay River and several mines in the Northwest Territories. It remains an important factor in the economic development of the Mackenzie Valley and the Arctic Coast. Large volumes of northbound equipment and material pass through the railhead at Hay River for shipment by barge along the Mackenzie River system.

VIA Rail Canada Inc. utilizes CN and CP trackage in Alberta to provide three passenger services: a tri-weekly Toronto-Winnipeg-Vancourver transcontinental service on the CN route through Edmonton and Jasper; a once-weekly summer service during daylight hours through the Rocky Mountains between Calgary, Banff and Vancouver, and between Jasper and Vancouver; and a tri-weekly regional service between Jasper and Prince Rupert. These trains are expected to bring approximately 60,000 passengers into Alberta during 1990.

VIA services are important to Alberta, primarily for tourism but also for the basic transportation links they provide to other parts of Canada.

Major intermodal yards have been developed by the railway companies in both Edmonton and Calgary. Intermodal facilities have also been built in other locations for specific purposes. For example, CN operates a modern transfer facility, specifically designed for local purposes, near Fort McMurray (Lynton). It currently handles about 200,000 tonnes per year.

The railways are essential to the movement of bulk commodities such as grain, timber, coal, sulphur, petrochemicals and other products to world markets. Bulky processed and manufactured products are also handled, particularly on long hauls. While industrial developments in northern Alberta are especially dependent on adequate rail service, all areas of the province require this mode of transport to maintain balanced resource growth.

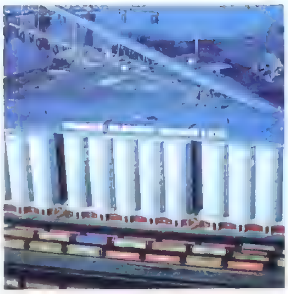
In recent years, both CN and CP have launched extensive capacity expansions in Western Canada, and although only part of this activity is taking place within Alberta, these projects have a major impact on the province. CP Rail, for example, recently completed its four-year, $600 million Rogers Pass project, while CN Rail has completed significant double tracking through the mountain corridors. An efficient, high-capacity rail system is essential to the competitive position of Alberta shippers in world markets. The province continues to work with the railways and the federal government to improve the system.

# INTERMODAL AND WATER TRANSPORTATION

Alberta companies depend heavily on intermodal transportation services, since a variety of commodities are delivered to customers outside the province by a combination of overland and marine transportation.

Overseas markets are accessed primarily through the ports of Vancouver, Prince Rupert and Fraser-Port in British Columbia, Seattle and Tacoma in the northwestern U.S., Thunder Bay on Lake Superior, and Montreal in Quebec.

Ocean going vessels transport grain, coal, sulphur, lumber and a variety of other agricultural, chemical and manufactured products from Alberta. In 1988, the Port of Vancouver handled a total throughput of more than 70 million tonnes of mostly export commodities – much of which originated in Alberta. Alberta importers and exporters traditionally account for approximately 40% of Vancouver's throughput.



*Prince Rupert Grain Terminal. B[illegible] funded by Alberta Heritage Savings Trust Fund*

## Facilities

Modern intermodal facilities in both Edmonton and Calgary provide for the movement of freight among various transportation modes, providing both exporters and importers and domestic shippers and receivers with an integrated door-to-door transportation package. Housing sophisticated equipment for moving and storing large containers, these facilities are easily accessed by trucks and railways, which serve all parts of the province on a daily basis.

## Trucking

Through formation of Alberta Intermodal Services Ltd., volume rate levels as low or lower than those available in other areas of Western Canada have been negotiated for shippers to West Coast ports. Subsequently, several intermodal steamship lines, along with freight forwarders and customs brokers, have established offices in the province, further enhancing access to international markets.

Efficient low-cost intermodal transportation systems keep Alberta companies competitive and help them penetrate new world markets. A number of initiatives further improve transportation links. These include more efficient truck/rail services via the Alberta/Montana border, improved access to U.S. southern and southeastern markets, and more efficient services to the California market. Other initiatives are designed to assist Alberta's business sector through shipment consolidation services for less-than-truckload shippers.

## Barges

Alberta products are also shipped on inland waterways. Most important to Alberta are the Mackenzie River for moving products as far north as the Beaufort Sea, and the St. Lawrence Seaway for transporting goods to eastern Canada, the eastern United States, Europe, and Middle East countries.

Barge services on the Mackenzie River, which is free of ice for four months of the year, are central to maintaining Alberta's position as Canada's major gateway to the north. Northbound cargoes are usually consolidated in

Edmonton and forwarded by rail and truck to Hay River on Great Slave Lake in the Northwest Territories. From there barges undertake the trip to the Beaufort Sea in the Canadian Arctic, some 1,770 km to the north. Goods also move by air and by truck from Alberta to northern communities. Trucks travel over the all-weather Alaska and Dempster highways.

During the 1987 shipping season, 66,000 tonnes of cargo were transported down the river. In 1988, the total was 59,000 tonnes. About three quarters of this represents resupply shipments for communities along the route, while the remainder is project-specific freight in support of mining and oil and gas activities in Canada's north.

# COMMUNICATIONS

*State-of-the-art television/movie production studio, Edmonton.*

**Alberta's Communications Systems**

- Alberta is a world leader in the application of new and innovative communications technology.
- Alberta is the base of two of Canada's largest and oldest telecommunications firms, both incorporating sophisticated digital, fibre optic and computer system technologies.
- Alberta has one of North America's most advanced mobile/cellular telephone networks, covering 70% of the province.

Communications play a vital and ever-expanding role in all aspects of today's complex society. This is clearly the case in Alberta, where long distances and widely scattered settlement, remote resource industry operating sites and an export-oriented business community have helped spur development of sophisticated and reliable communications systems.

The innovations and advances that have occurred in Alberta's telecommunications service and broadcasting sectors as well as print media have kept pace with developments in other North American jurisdictions. Indeed, in some areas, Alberta has become a world leader in communications technology.

Through the provincial crown corporation, Alberta Government Telephones (AGT), and the municipally owned and operated 'edmonton telephones', Albertans enjoy one of the most advanced telecommunications systems in North America. AGT was established in 1908 and is one of Canada's largest telecommunications companies. It provides local and long distance communications, business systems, terminal equipment, mobile communications and end-to-end services across Alberta. As a member of Telecom Canada, AGT delivers these voice and data services around the world.

'edmonton telephones', which provides a variety of advanced telecommunications services within the city of Edmonton, has been in business for more than 80 years. Today it is Canada's sixth largest telephone company and an industry leader in the implementation of fibre optic applications and telecom software. In 1988, AGT and 'edmonton telephones' had a combined revenue income of over $1.3 billion, approximately 13,500 employees, and well over a million network access lines.

With the help of telephone and computer terminals, Alberta business and industry routinely make use of voice/data conferencing, tap into global information banks, streamline the data flow within company operations and maintain close communication with contacts and clients both in Canada and around the world.

A microwave network owned by AGT (a partner in Telecom Canada) and by CNCP Telecommunications, extends to almost every area of the province. Both have national and international links. Through its subsidiary, Alta Telecom International Ltd. (ATI), AGT also sells telecommunications engineering and management expertise around the world.

Both AGT and 'edmonton telephones' have modernized over the past few years through increased application of digital, fibre optic, and computer systems technologies across all elements of their respective systems. To further bolster services, the province, along with AGT, is currently implementing an Individual Line Service (ILS) program, which will see all party line subscribers across Alberta switched to individual private lines by 1991. As a result, Albertans in all parts of the province will be able to use computers to transfer information and access data banks. Alberta also has one of the most extensive Extended Flat Rate Calling (EFRC) systems in North America.

Based in part on the unique communications needs of the oil and gas industry, Alberta has historically been the largest per capita user of mobile/cellular services in Canada. In 1987, 70% of Alberta's 661,185 square kilometres were covered by mobile/cellular service and approximately 33,500 Albertans were mobile/cellular service subscribers.

As a result of this demand, Alberta has one of the most technologically advanced mobile/cellular networks in North America. For example, North America's first 400 MHz cellular system and the world's first commercially operative decentralized system was introduced in Alberta in 1983. The development of mobile/cellular communications technology by AGT was an important factor in the creation of a manufacturing subsidiary, NovAtel, which today is Canada's only manufacturer of cellular communications equipment and systems.

Broadcast media have extensive coverage. In 1988 there were 53 AM and 21 FM radio broadcast originating stations in Alberta, as well as 60 rebroadcast stations providing virtually province-wide coverage. Twelve television stations operate from bases in Edmonton, Calgary, Lethbridge, Lloydminster, Medicine Hat and Red Deer.

Major Alberta centres receive cable television connecting them with American networks and satellite-originated specialty services. Approximately 67% of Alberta households are cable subscribers. Through the provincially owned ACCESS NETWORK, a widely recognized pioneer in the field of distance learning, the Alberta government supports an innovative educational radio and television system. ACCESS provides a wide range of formal and informal multi-media education services and is currently exploring new dimensions in satellite-based interactive television programming.

Satellite technology is used in Alberta to provide services such as radio and television programming throughout North America along with two-way interactive data and private video distribution for Alberta companies with a need to respond quickly to enquiries from around the world. Businesses ranging from financial institutions and retail chains to computer service companies and resource developers now use this technology.

Satellite communications facilities are enhanced by Telesat Canada's teleports in Edmonton and Calgary. These multiple-user satellite earth stations allow customers to access low-cost on-demand satellite services.

Ten daily newspapers and approximately 250 weeklies are published in Alberta. The dailies are published in Calgary, Edmonton, Lethbridge, Lloydminster, Medicine Hat, Red Deer, Grande Prairie and Fort McMurray. Total circulation exceeds 548,000 and the publications reach almost 85% of all households in the province. Weekly newspapers report a gross circulation of over a million copies.

Alberta's magazine publishing trade is also growing as commercial printing plants upgrade their equipment. Regular publications include those serving a variety of businesses and special interest groups.

*Alberta-produced mobile satellite broadcast unit*

**Alberta's Communications Systems**

- ACCESS NETWORK is an innovative provincially owned educational radio and television system which continues to break new ground in distance education.
- Alberta's 10 daily newspapers reach 85% of all households and some 250 weeklies have gross circulation of more than a million.

# RESEARCH AND DEVELOPMENT

*Major funding is provided for research and development.*

**Alberta's Research and Development Programs**

- Alberta leads all Canadian provinces in per capita spending on scientific activities.
- The Alberta government funded $242.9 million worth of scientific activity in 1987-88, with most of the research and development performed by universities and industry.

Research and development activities are at the very heart of Alberta's economic diversification strategy. This is reflected in the fact that Alberta leads all Canadian provinces in per capita spending on scientific activities.

Together, government, industry and the research community have mounted an aggressive campaign to stimulate new advanced technology industries in the province while keeping Alberta's traditional resource-based industries internationally competitive and at the leading edge of technological excellence.

Providing the impetus for much of this ambitious science and technology program is the Alberta government's support for both research and development (R&D) and related scientific activities (RSA). R&D is defined as creative work undertaken on a systematic basis toward the acquisition and application of new scientific and technological knowledge. It includes work in the natural sciences, engineering, social sciences and humanities. RSA is an umbrella term for an array of ancillary information, testing and demonstration activities.

In 1987-88 the Alberta government funded $242.9 million in scientific activities, of which $172.7 million (71.1%) went toward R&D and the remainder to RSA. As illustrated in Table I, industry and the universities were the primary performers of provincially funded R&D. In contrast, 82% of the dollar value of RSA was performed by government departments and agencies.

Unlike the federal government, which is essentially a performer of R&D and RSA, Alberta is primarily a funder of R&D and a performer of RSA. Based on the philosophy that industry is the generator of Alberta's economic activity, two thirds of the provincial government's R&D agenda is executed by industry and universities.

Alberta's support for scientific activity has increased by an average annual rate of 7.8% since 1981-82, when total spending on science by the Alberta government was $165.4 million. This compares with 1987-88 expenditures of $242.9 million.

Increased expenditures on scientific activities were largely concentrated in R&D funding, which rose from about 63% of all science expenditures in 1981-82 to 71% in 1987-88. Much of this increase was channeled to universities, reflecting a trend in provincial government funding of R&D in the 1980s.

In supporting scientific activities, the provincial government pursues two objectives: improving the productivity and growth of traditional economic sectors through development and application of scientific and technological innovations; and supporting the development of an indigenous base of technology-intensive manufacturing and other advanced technology activity.

The specific objectives of provincially funded scientific activities are shown in Table II, which indicates most support has gone to science activity related to economic development and industry (35%), health (25.7%) and energy (14.4%).

With scientific and advanced technology activity proceeding on a number of fronts ranging from biotechnology to telecommunications, the provincial government assumes the dual role of coordinator and facilitator. Its support for scientific activities is reflected in both direct financial assistance to help firms and individuals develop and commercialize promising technologies, and in the establishment of research centres.

## TOTAL EXPENDITURES BY THE GOVERNMENT OF ALBERTA ON SCIENTIFIC ACTIVITIES

### By Performing Sector, 1987-1988

| PERFORMER | R & D | | RSA | | TOTAL SCIENTIFIC ACTIVITY | |
|---|---|---|---|---|---|---|
| | ($M) | % of Total | ($M) | % of Total | ($M) | % of Total |
| Government | 22.0 | 12.7 | 57.6 | 82.1 | 79.6 | 32.8 |
| Industry | 44.1 | 25.5 | 6.6 | 9.4 | 50.7 | 20.9 |
| University | 68.3 | 39.5 | 1.3 | 1.9 | 69.6 | 28.7 |
| Hospitals & Health Care | 0.7 | 0.4 | – | – | 0.7 | 0.3 |
| Alberta Research Council (ARC) | 31.9 | 18.5 | 1.1 | 1.6 | 33.0 | 13.6 |
| Other | 5.7 | 3.3 | 3.6 | 5.1 | 9.3 | 3.8 |
| **TOTAL** | **172.7** | | **70.2** | | **242.9** | |

## OBJECTIVES OF PROVINCIAL GOVERNMENT EXPENDITURES ON SCIENTIFIC ACTIVITIES, 1987-1988

| OBJECTIVE | $ MILLION | % OF TOTAL* |
|---|---|---|
| ADVANCEMENT OF SCIENCE | **9.2** | **3.8** |
| ENERGY & FUELS | | |
| Fossil Fuels | 33.3 | 13.7 |
| Others | 1.6 | 0.7 |
| **SUBTOTAL** | **34.9** | **14.4** |
| ENVIRONMENT | | |
| Air | 3.7 | 1.5 |
| Water | 6.8 | 2.8 |
| Other | 6.2 | 2.6 |
| **SUBTOTAL** | **16.7** | **6.9** |
| HEALTH | **62.5** | **25.7** |
| INDUSTRY AND ECONOMIC DEVELOPMENT | | |
| Agriculture | 20.9 | 8.6 |
| Forestry | 5.2 | 2.1 |
| Manufacturing | 52.9 | 21.8 |
| Other | 6.1 | 2.5 |
| **SUBTOTAL** | **85.1** | **35.0** |
| SOCIAL DEVELOPMENT | **22.5** | **9.3** |
| TRANSPORTATION | **11.0** | **4.5** |
| OTHER | **1.0** | **0.4** |
| **TOTAL** | **242.9** | |

* Percentages may not add to 100 due to rounding

# RESEARCH INSTITUTES

[illegible]
*Edmonton*

[illegible]

- Alberta has become a leading world centre for medical research, with close to $50 million awarded in 1987-88 to medical science programs funded by the Alberta Heritage Foundation for Medical Research.
- Alberta has a highly developed science and technology infrastructure designed to help industry develop and commercialize innovative technology and products.

Alberta's provincially supported research centres offer wide-ranging research assistance in the form of facility use and the collective expertise of research professionals. The focus is on improving mechanisms for technology transfer, fostering industry/university/government interaction and harnessing collective skills and expertise in order to reach common research goals.

The Alberta Microelectronic Centre (AMC), for example, helps Alberta industry develop and apply microelectronic technology to a variety of situations and uses. Research is product-oriented rather than theoretical and includes work in areas such as microsensors, Very Large Scale Integration (VLSI), and device and process modeling. Collaborative efforts of the AMC and the University of Alberta in the field of sensor R&D have been internationally recognized.

The Alberta Telecommunications Research Centre (ATRC) is a cooperative organization in which the benefits of research are shared among its university, government and industry sponsors. The focus is also on applied, rather than basic research, and involves research into a variety of telecommunications areas, based on the research needs and agendas of its sponsors.

The Centre for Frontier Engineering Research (C-FER), a non-profit centre located in Edmonton, addresses engineering and other problems related to cold region development, offering technical and consultative services and undertaking contract research for industry. C-FER's own research program, which will continue in new $18 million test facilities to be completed in 1990, focuses on offshore structures and downhole tubular systems.

The Alberta LASER Institute (ALI) helps industry develop and use laser systems as a cost-efficient production technique and also performs contract research.

The University of Calgary's Cyber 205 Supercomputer Facility is available to industry researchers in need of high speed supercomputer modeling and processing.

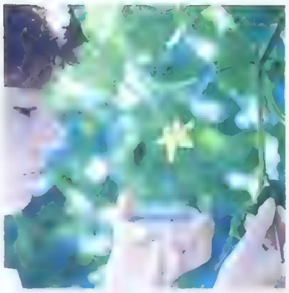
The Electronics Test Centre at the Alberta Research Council's Edmonton facility provides evaluation, testing and consulting services to electronics and telecommunications manufacturers to meet Canadian and international requirements.

The provincial government has also supported the development of Alberta's advanced technology infrastructure by helping to establish advanced technology "incubators" and research parks in Calgary and Edmonton. The parks offer advanced technology firms fully serviced sites for the construction of research and corporate facilities close to universities and other advanced technology facilities.

Multi-tenant research facilities are also available – in Discovery Place I at Calgary's University Research Park, for example, and at the Edmonton Advanced Technology facility. Both offer young, technology-intensive companies flexible space in smaller units on short-term, competitive leases. Tenants share office support services and gain access to experienced business and technical experts, financing and seed capital.

# FINANCIAL SUPPORT

Direct financial assistance is offered through several programs administered by the Department of Technology, Research and Telecommunications. Among these initiatives are the Technology Commercialization Program, which provides financial assistance to the private sector to support new institutes, develop new products, commercialize research and conduct feasibility studies; and the First Purchase Program, which helps Alberta firms sell their newly developed and technology-intensive products and services to government departments, crown corporations, agencies and boards. Venture capital funding is also available through Alta-Can Telecom, Spurt Investment Fund I, Vencap and the Alberta Opportunity Company.



*Research is key to the success of the agri-food business.*

# AGRICULTURAL RESEARCH

Technological innovation is also encouraged in traditional economic sectors. Research and technology continue to be the keys to maintaining and expanding Alberta's internationally competitive and profitable agri-food industry. The Alberta Agricultural Research Institute (AARI) supports long-term research programs and fosters research cooperation among industry, government and academic researchers. The institute funds research either directly or on a cost-shared basis with eligible applicants.

The Farming for the Future Program provides financial assistance to public agencies, private companies and individuals for both basic and applied agricultural research, as well as for practical demonstrations of new agricultural technologies.

# ENERGY RESEARCH

The Government of Alberta has made a major commitment to scientific research in energy by establishing several organizations and institutes. The Alberta Oil Sands Technology and Research Authority (AOSTRA), established in 1974, relies on industry, government and university resources for the development of technology for resource extraction and commercial applications. It has made significant progress in devising technologies for developing Alberta's vast heavy oil and oil sands deposits.

The Alberta Office of Coal Research and Technology (AOCRT) was established in 1984 to assist in the development of Alberta's coal industry and to help implement new technologies which enhance the competitiveness and marketability of Alberta coal.

The Devon Coal Research Centre is home to three of Canada's major research organizations, and houses more than 100 scientists, technologists and engineers. Included are the Coal and Hydrocarbon Processing Department of the Alberta Research Council, and the Coal Research Laboratory (a division of the Canada Centre for Mineral and Energy Technology, or CANMET). Each works toward the common goal of ensuring efficient and productive coal mining processing and utilization industries in Canada.

# MEDICAL RESEARCH

*Medical research is earning Alberta world-wide respect*

The provincial government's commitment to medical research has been particularly strong in recent years. Through the establishment of the Alberta Heritage Foundation for Medical Research (AHFMR), the province has helped to support a balanced, long-term program of medical research in Alberta. Funding for the AHFMR comes through investment of interest earnings on a $300 million endowment from the Alberta Heritage Savings Trust Fund.

The foundation funds scientists through a grants and awards program designed to recruit, support and train a critical mass of career scientists in Alberta. Since its inception, the AHFMR has provided $250 million in direct funding to the scientific community to support independent research positions, train students, and provide equipment to laboratories. AHFMR has also funded the construction of two $28 million Heritage Medical Research Buildings in Edmonton and Calgary.

In 1987-88, approximately $49.7 million was awarded under the various AHFMR scientific programs. Some of the well established scientists supported by the foundation are recognized as international authorities in such research areas as the heredity of cancer, persistent viruses and neurological diseases. The AHFMR also supports a number of renowned research groups, including the University of Calgary Cardiac Research Group, which is pioneering ways to diagnose heart disease and prevent sudden cardiac death. The University of Alberta Nuclear Magnetic Resonance Research Group is one of a handful in the world using this new technology to diagnose and monitor cancer and stroke damage.

Other younger scientists are charting new territory in Canadian research with innovative studies of problems such as autism, ligament injury, and sour gas injury.

AHFMR's technology transfer activities have been strengthened by the five-year Alberta Medical Innovation Program (MIP), which was created with $9.2 million in funds made available to the province through the newly enacted federal Patent Act. Its purpose is to help commercialize medical research that is nearing the point of clinical testing, and to complement the AHFMR's existing Technology Transfer Program.

In the area of cancer research, the Alberta Cancer Board supports a cooperative research program between the University of Alberta and the Cross Cancer Institute in Edmonton, and between the University of Calgary and the Tom Baker Cancer Centre in Calgary. Both the Cross Cancer Institute and the Tom Baker Cancer Centre are part of a North American network of oncology research, with emphasis on medical pediatrics and radiation oncology. The Cross Cancer Institute is one of three Canadian cancer centres belonging to the 28-member international network for radiation oncology research. Both centres have internationally recognized leaders in a number of cancer research fields.

# ENVIRONMENTAL RESEARCH

Alberta is actively involved in environmental research. At the local and provincial level, government concerns centre around developing standards and regulations to protect and enhance the environment and establishing the monitoring and enforcement programs to ensure these standards and regulations are met. The emphasis is on both analytical and applied research and on the development of technology for reducing or eliminating such environmental problems as water pollution.

In addition, Alberta addresses global environmental concerns such as those expressed in reports of the Brundtland Commission ("Our Common Future") and of the National Task Force on Environment and Economy. Alberta has also established a Round Table on the Environment and Economy.

Major emphasis is also being placed on acid deposition, the greenhouse effect (and climate change), and ozone depletion. Alberta's strategies will be integrated with those of other provincial, federal and international initiatives in the same areas.

While the Alberta Environment Research Trust Fund provides support for applied and fundamental R&D in environmental improvement, most research activity takes place at the Alberta Environmental Centre in Vegreville. The Centre provides analytical and diagnostic services, applied research, and technology development to all departments and agencies of government.

Another major effort in this area is the development of the Centre of Environmental and Waste Management Expertise. The Centre has an interest in marketing Alberta's expertise in waste management and coordinating research and development projects directed at optimal environmental protection and monitoring of results.

*Research is a core feature of Alberta's diversification strategy*

# ALBERTA RESEARCH COUNCIL

Centrepiece of the province's science and technology thrust is the Alberta Research Council (ARC). Founded in 1921, ARC was the first publicly funded provincial research organization in Canada. Its mandate is to support and promote economic development in Alberta through scientific, engineering and technological research. The goal is to enhance the development and competitiveness of Alberta industry across all sectors by providing both public and private sectors with technical services and useful scientific information and technology.

ARC draws on practical experience in helping to ensure Alberta firms participate in new industry developments in the province. It also encourages the transfer of technology, particularly to the private sector, but also to the public sector.

Major ARC research programs focus on oil sands and hydrocarbon recovery, coal and hydrocarbon processing, biotechnology, industrial technologies, forest products, land and environmental resources, and advanced technologies. ARC annually conducts approximately $33.8 million in provincially funded scientific activities. It also provides contract research services for firms and individuals and takes part in collaborative research through its Joint Research Venture program. In 1988, the ARC conducted more than $9 million worth of contract research for private industry.

# 10 INTERNATIONAL TRADE AND INVESTMENT

International trade fosters Alberta's economic growth and prosperity.

The Alberta economy has traditionally been investment-driven in terms of income and employment growth. Investment, which normally represents roughly 25% of Alberta's Gross Domestic Product and at times accounts for up to 40%, is clearly a crucial factor in Alberta's economic performance.

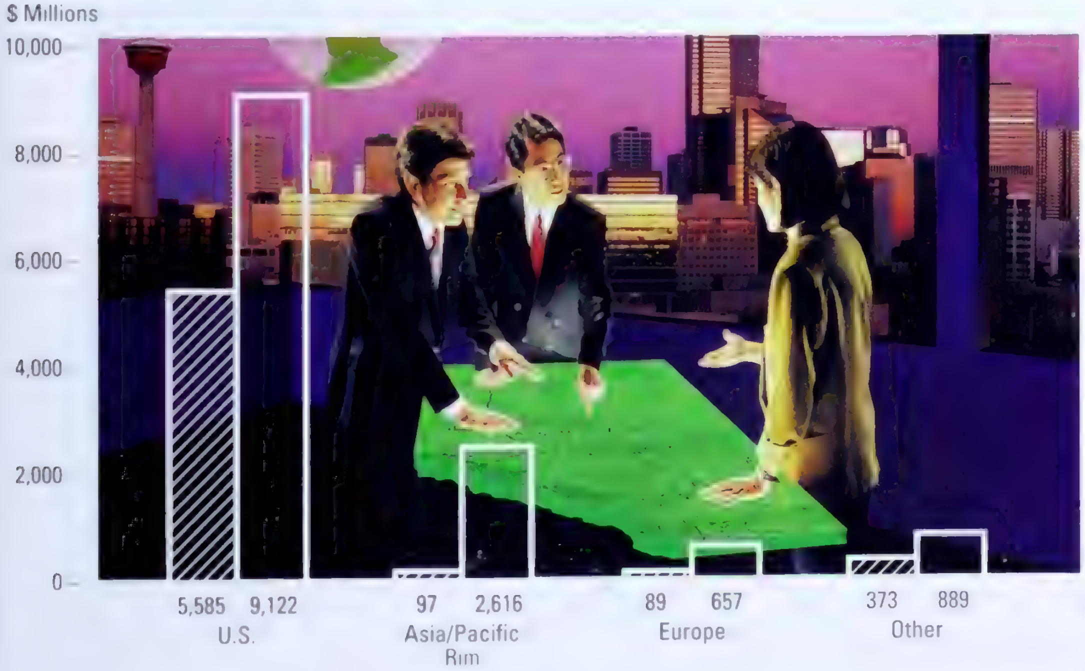
Alberta encourages foreign capital investment to supplement investment from domestic sources. Foreign investment fostered an agricultural export economy in the first part of the century and assisted in the rapid development of the petroleum industry following the Second World War. It is estimated that foreign direct investment has accounted for up to 25% of all new investment in the province in some years. Generally, however, the level has averaged between 10% and 15%.

Many of Alberta's future development prospects – oil sands, forestry, coal mining, high technology, petrochemicals – are capital-intensive. Large amounts of new investment capital from both domestic and foreign sources will be necessary to take advantage of these opportunities.

Capital does more than simply generate jobs. Investment is an important vehicle in transferring technology, increasing productivity, and improving competitiveness. Attracting investment will only be possible if foreign investors are welcome and a domestic economic climate exists which encourages investment. Alberta recognizes the importance of maintaining its

**Alberta's International Trade and Investment**

- Investment generally accounts for at least 25% of Alberta's annual Gross Domestic Product.
- As many as 250,000 Albertans are directly or indirectly employed as a result of international trade.



ALBERTA EXPORT MARKETS

▨ 1979

Total Exports
$6.1 billion

🟥 1988

Total Exports
$13.3 billion

CHART 10.1

SOURCE: STATISTICS CANADA

**Alberta's International Trade and Investment**

- The resource sector is Alberta's biggest export earner, accounting for six of the top 20 Alberta exports.

favourable regulatory and taxation regimes as well as its strong commitment to private enterprise and the opportunity to earn a return that compensates for risk.

# IMPORTANCE OF TRADE

International trade continues to play an integral role in the growth and prosperity of the Alberta economy. Canada's small domestic market has made Alberta dependent on international markets for expansion and diversification of its economic base. In 1988, international exports accounted for more than 22% of Alberta's Gross Domestic Product (GDP).

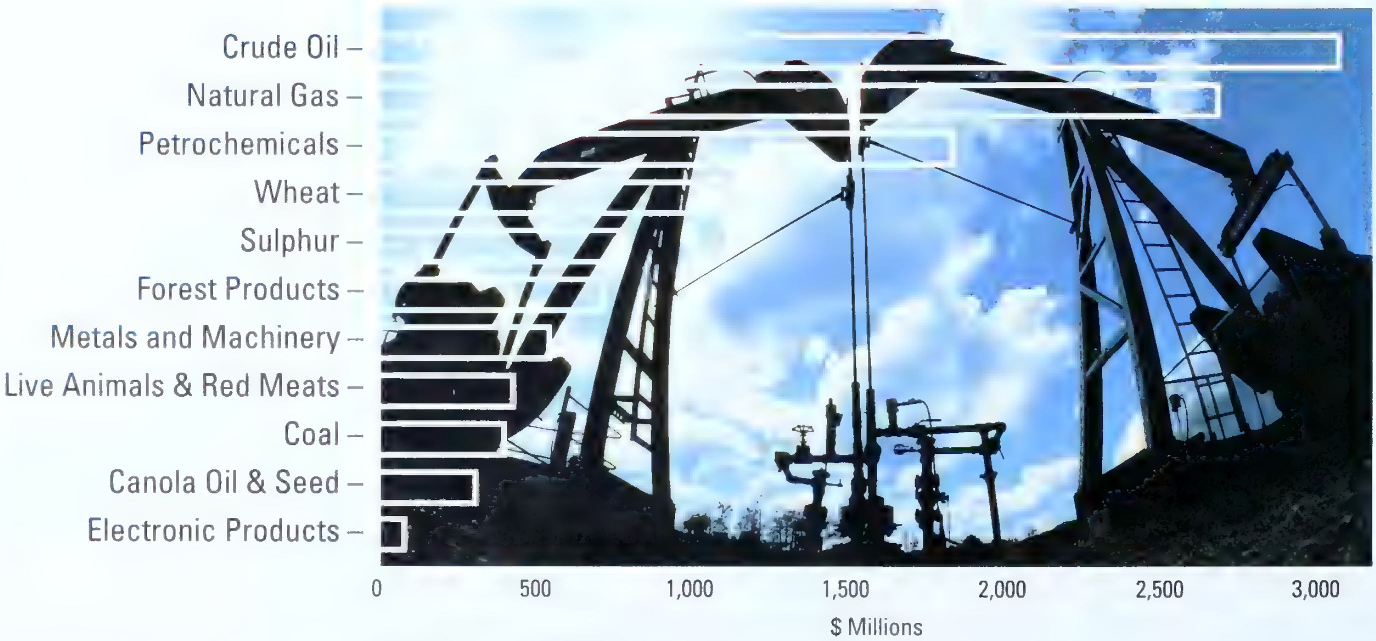
As many as 250,000 Albertans are directly and indirectly employed as a result of international trade. It is estimated that for every $1 billion in new exports, approximately 19,000 new jobs are created. Clearly, further expansion of export markets will continue to generate new jobs.

Recognizing the close links between economic development and trade, the Alberta government strongly encouraged the Canadian government to participate in two sets of trade negotiations with the objective of securing and enhancing export markets for Alberta businesses.

The Canada/U.S. Free Trade Agreement (FTA), implemented January 1, 1989, eliminates tariffs, reduces non-tariff barriers, and further liberalizes investment flows between the two countries. The FTA will bring significant benefits to the Alberta economy, in effect creating a combined market of over 270 million people. Virtually every sector will benefit as a result of the agreement.

By eliminating tariffs, reducing a number of non-tariff barriers, and liberalizing investment flows, the FTA will encourage substantial new investment in Alberta, as foreign and

## TOP 10 ALBERTA EXPORTS, 1988 CHART 10.2

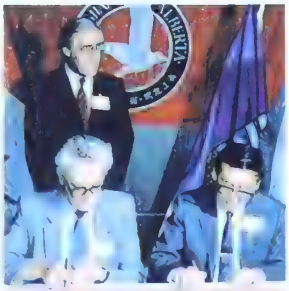


SOURCE: STATISTICS CANADA

domestic companies see the advantages involved. The enhanced and more secure access to the large U.S. market that Alberta will enjoy, combined with energy and raw material costs that are generally more competitive than those in the U.S., will be a strong incentive to invest in the province.

The General Agreement on Tariffs and Trade (GATT), established in 1948, provides a multilateral framework in which world trade has been progressively liberalized and world trade problems resolved. Prior to the signing of the Canada/U.S. Free Trade Agreement, the GATT functioned as the basic agreement governing trade relations between the two countries. Among GATT principles are the prohibition of export subsidies (except on agricultural products) and "dumping" – selling goods in export markets for less than they are sold domestically.

The Uruguay Round of Multilateral Trade Negotiations (MTN), the eighth such round to be undertaken since the inception of GATT, started in 1986 with the objective of further liberalizing international markets. More than 95 countries are participating in these negotiations, including all the industrialized countries of the western world, almost 70 developing countries and a number of centrally planned economies. The Uruguay Round is breaking new ground by negotiating issues never before dealt with in the GATT. Issues which are being addressed in the multilateral negotiations for the first time include services, investment, intellectual property rights and agricultural subsidies.



*Foreign investment is encouraged*

# EXPORTS

From early days, Alberta's fur traders, farmers and ranchers relied on external markets for their livelihood. With the discovery of major oil and natural gas fields after 1947, Alberta became an energy-rich province exporting to the rest of Canada and the U.S. Commodities related to the energy and agriculture sectors are now the biggest exports.

With the abundant grain harvests of the 1960's and the rise in energy prices in the 1970's, more dramatic changes began to occur as prosperity altered the structure of the Alberta economy. Resource processing and manufacturing industries grew rapidly in order to upgrade resources and to supply expanding national and international markets.

Exports have reflected this change. In 1975, only about 10% of Alberta's exports consisted of manufactured goods. By 1988, manufactured exports had reached 29% of the total.

In 1988, exports of goods and services were valued at over $14 billion, representing more than one fifth of the province's GDP. This is an increase of 11.5% over 1987. Alberta continues to diversify its export markets. As recently as 1980, the U.S. purchased more than 89% of Alberta exports. By 1988, the figure has dropped to 69%, reflecting the further diversification of Alberta's export markets and greater penetration of existing markets outside of the U.S.

The resource sector continues to be the biggest export earner. Crude materials – natural gas, crude petroleum, sulphur and coal – which account for the bulk of resource exports, were valued at $7.1 billion in 1988, 50% of the total. This represents a slight decline from $7.13 billion in 1987. Natural resource products account for six of the top 20 Alberta exports.

## Alberta's International Trade and Investment

- Manufacturing is Alberta's second largest export sector, accounting for roughly $4.1 billion in exports in 1988.
- In 1988, the United States accounted for 69% of Alberta's merchandise exports – with a value of $9.1 billion.
- Three of Alberta's top four major export markets are Asia/Pacific Rim countries, which purchased roughly $2.6 billion worth of Alberta products in 1988.

**Alberta's International Trade and Investment**

- Alberta promotes strong international cultural and technical ties through "twinning" relationships, scientific exchanges, and a network of foreign offices in Asia, Europe and the United States.

The second largest export sector is manufacturing, which produces fabricated materials and end products such as petrochemicals, lumber, wood pulp, fertilizers, telecommunications, and electrical equipment. Together, such products accounted for almost $4.1 billion in exports in 1988.

Agriculture, excluding food processing and beverages, accounted for $1.9 billion in exports in 1988 – approximately 13% of total Alberta exports. Wheat was Alberta's third largest export, valued at $1.1 billion in 1988.

In 1988, Alberta exported to 140 countries on five continents. The U.S. and Japan continued to be Alberta's two leading export markets. Three of the top four major export markets are Asia/Pacific Rim countries. In 1988, Asia/Pacific Rim countries accounted for nearly 20% of total Alberta exports, up from 16% in 1987. Alberta exports to the region increased by 38% to approximately $2.6 billion.

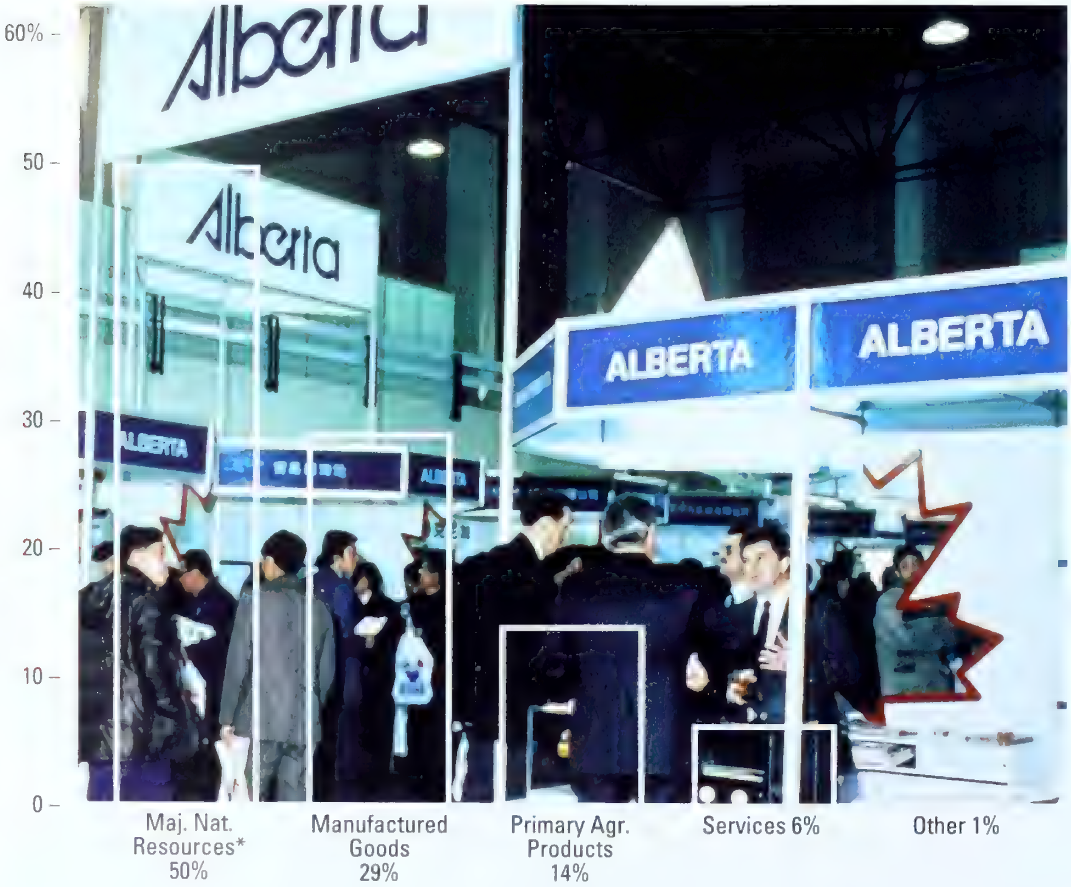
Newly industrialized and developing regions are rapidly becoming significant players in the international marketplace. Brazil, South Korea, and Taiwan are among Alberta's top 10 export markets for 1988.

The U.S. accounted for 69% of Alberta's merchandise exports with a value of $9.1 billion. Oil and gas remained the two largest exports. Most of Alberta's exports are shipped to the mid Western, Pacific northwest and California markets.

In Europe, the third largest export region, the USSR was the destination for 2.0% of total Alberta exports. Strong export performance was achieved in the United Kingdom, France, Belgium and West Germany.

## ALBERTA EXPORTS OF GOODS AND SERVICES 1988

## CHART 10.3



* NON-RENEWABLE (CRUDE OIL, NATURAL GAS, SULPHUR, COAL)

SOURCE: STATISTICS CANADA

# INTERNATIONAL CULTURAL AND TECHNICAL AGREEMENTS

*Harbin Gate, Chinatown, Edmonton*

Maintaining strong international relations with other countries improves understanding among people and stimulates two-way trade. These ties are strengthened through special relationships with foreign provinces states, cooperation agreements, and cultural exchanges.

## SPECIAL RELATIONSHIPS

Alberta has well developed sister province programs (twinnings) with the northern provinces of Heilongjiang, China (1981), Hokkaido, Japan (1980), and Kangwon, Korea (1974). Over the past decade these ties, based on shared climate and resources, have provided valuable opportunities to strengthen Alberta's relations in the Asia-Pacific region. Individual exchange programs resulting from these special relationships have led to trade missions and other activities in areas of mutual interest. Included are commercial and municipal interaction, and exchanges in such fields as agriculture, forestry, technology, science, medicine, education, culture, sports, and advanced education. Cooperation in these areas has progressed continuously since these formal affiliations were initiated.

Eleven Alberta municipalities maintain affiliations with counterparts in Asian provinces. They are: Edmonton and Harbin, and Calgary and Daqing in Heilongjiang, in China. Alberta communities twinned with counterparts in the province of Hokkaido, Japan are: Stony Plain and Shika-Oi; Lacombe and Rikubetsu; Rocky Mountain House and Kamikawa; Camrose and Kamifurano; Stettler and Okoppe; Canmore and Higashikawa. Other Alberta municipalities maintain affiliations with municipalities in Japan: Jasper and Hakone, Banff and Obama, Taber and Notogawa.

In October 1989, the province signed a cooperative agreement creating a new sister-province relationship with the Russian Soviet Federated Socialist Republic in the Soviet Union.

## INTERNATIONAL SCIENCE AND TECHNOLOGY

Alberta's international scientific exchanges emphasize cooperation in northern technology and the natural resource sector. Coal liquefaction, coal transportation, heavy oil and oil sands technology, and enhanced oil recovery have been of particular importance.

The second International Symposium on Cold Regions Development (ISCORD), for example, will be held in Edmonton in June, 1991. It will bring together 300 to 500 delegates from northern region countries around the world to discuss science and engineering developments in areas as diverse as agriculture, transportation, medicine, construction and communications. This conference is jointly orgainzed by Alberta and its sister provinces in Japan and China.

The Alberta Oil Sands Technology and Research Authority (AOSTRA) plays an active role in the international arena, maintaining cooperative agreements with countries such as China, Brazil, Hungary, the United States, Peru and Venezuela. AOSTRA has maintained cooperative agreements for the development and exchange of technology in the fields of oil sands, heavy oil and enhanced oil recovery. These efforts have helped solve common technological problems, reduce costs through joint efforts, expand the pool of expertise, and market Alberta petroleum technology. In addition AOSTRA has provided analysis and testing services for countries with hydrocarbon deposits similar to those in Alberta.

*One of Alberta's two U.S. foreign offices is in Los Angeles, California.*

# ALBERTA FOREIGN OFFICES

Alberta maintains foreign offices around the world to provide Alberta businesses with marketing information, facilitate commercial and technological exchanges, and introduce potential investors to opportunities within the province.

## THE UNITED STATES

Alberta maintains two U.S. offices – in New York and Los Angeles.

Activities of the New York office include reporting on legislative and regulatory developments in Washington D.C., particularly as they affect energy, agriculture and trade. The office also works closely with the New York financial community, providing intelligence on economic and energy trends, seeking investment, and assisting Alberta companies wishing to do business in the northeastern states.

The Los Angeles office provides assistance to Alberta exporters, many of whom are entering the western U.S. market for the first time. It also conducts tourism promotions which have resulted in a marked increase in the number of Californians visiting Alberta. The province's major export to this market has been natural gas. However, breakthroughs are being recorded in electronics, food products, computer software, and furniture and related wood products.

## TOKYO, JAPAN

The Alberta Government Office in Tokyo is responsible for representing Alberta's interests in Japan. The primary focus is on investment and trade promotion, tourism, education, science and technology and culture. The office is also involved with the numerous exchange programs that take place between Alberta and its sister province of Hokkaido.

## SEOUL, KOREA

Alberta opened an office in Seoul, Korea in 1988 in response to exciting and growing opportunities in that country. Korea is now Alberta's fourth largest export market. Main areas of activity are investment and trade promotion, tourism, and the further development of Alberta's sister relationship with the province of Kangwon.

## HONG KONG

The Alberta office in Hong Kong was established in 1980 to represent Alberta's interests in China and the Asian nations, as well as in Australia and New Zealand. Main areas of concentration are agriculture, oil and gasfield equipment and services, telecommunications, and investment and business immigration.

## LONDON, UNITED KINGDOM

The London office represents Alberta's interests in the U.K. and Europe. Duties include the maintenance of close relations with the British and European business and investment communities, the Canadian and provincial offices in Britain and Europe, and European government officials.

*World-wide contacts strengthen Alberta's international relations*

# ALBERTA AGENCY FOR INTERNATIONAL DEVELOPMENT

The Government of Alberta provides financial assistance to less developed countries through the Alberta Agency for International Development.

The largest program of any province in Canada, it annually supports approximately 150 development projects in about 50 countries. Total assistance provided in 1988-89 was more than $8.3 million.

The program is conducted in cooperation with about 60 Non-Governmental Organizations (NGOs). These are not-for-profit international development agencies to which the people of Alberta make voluntary financial contributions. An NGO is required to contribute to a project from its privately raised funds an amount at least equal to the amount it receives from the Alberta government.

Projects are normally small scale development activities at the village level and in rural areas of less developed countries. They are usually designed to assist in increasing production (especially food production), improve health, increase incomes, create employment and impart new and practical skills. Assistance is also provided for projects designed to relieve suffering of people in emergency situations, such as drought and natural calamities.

The program has been in operation for 15 years and is an integral part of Canada's international assistance community. ■

# 11 A GUIDE TO GOVERNMENT DEPARTMENTS, AGENCIES AND PROGRAMS

*Private sector initiatives are enhanced by government programs and services.*

Alberta's vibrant economy reflects both the efforts and attitudes of a vigorous and resourceful private sector. In order to encourage and support this impressive private sector commitment, the Alberta government has consistently sought to create a climate in which private enterprise can grow and expand.

Government initiatives are designed to be flexible and reflect current economic and social conditions within the province. Since programs and services are constantly being evaluated and updated to ensure they remain sensitive to the needs of Albertans, readers are urged to make direct contact with appropriate provincial government departments and agencies in order to receive up-to-date information.

A number of federal government initiatives also have implications for Alberta business and industry. Again, direct contact with relevant departments is advised.

The following chapter contains a complete list of Alberta government departments and selected provincial agencies and Crown corporations. Also included is a list of key Government of Canada departments, Crown corporations and agencies, whose programs and services are of interest to businesses and individuals. General contact numbers are provided below.

# GOVERNMENT OF ALBERTA

To reach the following provincial government departments, Crown corporations, boards and agencies, telephone the RITE government number: (403) 427-2711.

- **Alberta Advanced Education** establishes and administers higher and further education programs, services and institutions in Alberta.
- **Alberta Agriculture** manages programs related to all phases of agriculture in the province, including primary production, processing, marketing and research activities.
- **Alberta Attorney General** provides legal services to the government, administers justice and enforces laws, and regulates public utilities and gaming activity in the province.
- **Alberta Career Development & Employment** is responsible for government programs designed to help Albertans prepare for and participate in productive employment.
- **Alberta Consumer & Corporate Affairs** develops and manages programs designed to advise consumers of their rights and responsibilities, and fosters the development of business activity in a fair marketplace.
- **Alberta Culture & Multiculturalism** develops and supports cultural programs and services, and coordinates government and public efforts to preserve, study and interpret

Alberta's historical resources.

- **Alberta Economic Development & Trade** implements the economic strategy of the Government of Alberta through programs designed to build domestic and international trade, generate new investment and help Alberta businesses grow, diversify and achieve their full potential.
- **Alberta Education** is responsible for the establishment, operation, administration, and management of primary and secondary education programs with the overall objective of maintaining and increasing the quality of education in all parts of Alberta, while ensuring maximum value for each dollar spent.
- **Alberta Energy** establishes the policy framework for the oil, gas, coal and electric utility industries in the province, manages Alberta's energy and mineral resources for the benefit of Albertans, and provides information to encourage potential investors in Alberta's energy industry.
- **Alberta Environment** coordinates government's environmental protection efforts and undertakes activities that enhance the environment for the benefit of present and future generations of Albertans.
- **Alberta Family & Social Services** is responsible for managing and/or funding programs and institutions designed to promote the physical, mental and social well-being of Albertans.
- **Alberta Federal & Intergovernmental Affairs** coordinates all activities of the Government of Alberta and its agencies in relation to the Government of Canada, other Canadian provincial and territorial governments and governments of foreign countries.
- **Alberta Forestry, Lands & Wildlife** is responsible for administering and managing Alberta's forest resources, public lands, and fish and wildlife resources, developing integrated resource policies and planning services, and coordinating provincial surveying and mapping activities.
- **Alberta Health** establishes, funds and coordinates programs that promote the physical and mental health of Albertans, and administers the Alberta Health Care Insurance Plan.
- **Alberta Labour** is responsible for programs designed to assure a high degree of safety for the public through standards, inspection, research, and education; to encourage the development of effective and responsible relationships between labour and management; and to ensure the protection of rights of employees and the human rights of individuals.
- **Alberta Municipal Affairs** is responsible for legislation covering administration of municipalities and for housing and native affairs programs.
- **Alberta Occupational Health & Safety** is responsible for programs designed to prevent injury, ill health and genetic damage related to the job or work environment.
- **Alberta Public Safety Services** is responsible for promoting public safety in Alberta, and for managing the Emergency Planning and Response Program and the Dangerous Goods Control Program.
- **Alberta Public Works, Supply & Services** is responsible for providing a broad range of accommodation, utilities, goods and services to the provincial government and its agencies, acquiring land, and assisting with the design of hospitals, nursing homes and major surface water development projects.
- **Alberta Recreation & Parks** develops and supports recreational services and programs and develops and manages provincial parks.

- **Alberta Solicitor General** is the department that provides law enforcement, correction services, vehicle registration and driver licensing services in the province as well as direction to the Alberta Liquor Control Board.
- **Alberta Technology, Research & Telecommunications** is responsible for policies and programs aimed at further diversifying the Alberta economy by emphasizing advanced technologies and ensuring that Albertans have access to high quality, affordable telecommunications services.
- **Alberta Tourism** is responsible for promoting the development of a competitive tourism industry through a variety of planning, development, marketing and education initiatives.
- **Alberta Transportation & Utilities** is responsible for building and maintaining an integrated transportation system and helping to provide essential utilities, including water and sewer facilities, electricity and natural gas.
- **Alberta Treasury** is the ministry responsible for the management, control and reporting of revenue and expenditure; borrowing, investments, cash management, financial and budgetary procedures of the crown, including the Alberta Heritage Savings Trust Fund.

# SELECTED PROVINCIAL BOARDS, COMMISSIONS AND CROWN CORPORATIONS

- **Alberta Advisory Council on Women's Issues** is an autonomous citizens' body and an official adviser to government on issues of particular concern to women and on legislation which best serves the needs of Alberta women.
- **Alberta Agriculture Development Corporation** is involved in both direct lending and loan guarantee programs to Alberta farmers and agri-businesses.
- **Alberta Liquor Control Board** is an Alberta Crown corporation responsible for the administration of the Liquor Control Act and Regulations and for the purchase and sale of all beverage alcohol products in the province.
- **Alberta Motor Transport Board** is responsible for governing, in the public interest, highway transportation in and for the Province of Alberta.
- **Alberta Oil Sands Technology & Research Authority (AOSTRA)** is a provincial Crown corporation that promotes research and development related to the efficient economic recovery and processing of crude bitumen and other oil sands products, and enhanced oil recovery from conventional oil resources.
- **Alberta Opportunity Company**, a Crown corporation established to stimulate new business and expansion of existing businesses, provides loans and loan guarantees, management counselling and other specialized services primarily to Alberta-owned enterprises in smaller population centres.
- **Alberta Public Utilities Board** is an administrative tribunal whose primary function is to establish just and reasonable utility rates.
- **Alberta Research Council** is a Crown corporation that promotes

economic development in Alberta through pure and applied research, analytical services and industrial engineering problem solving. Major areas of activity include Advanced Technologies, Forestry, Materials and Testing, Oil Sands, Coal and Natural Resources.

- **Alberta Securities Commission** administers the Securities Act of Alberta and the Franchises Act of Alberta in order to ensure that investors receive full, true and plain disclosure regarding investment opportunities in the securities and franchises area; and regulates the securities industry with a view to maintaining an efficient and effective capital market in Alberta.
- **Alberta Special Waste Managment Corporation** is a Crown corporation charged with ensuring the establishment and safe operation of sufficient facilities to deal adequately with hazardous wastes which are not dealt with by other hazardous waste management facilities.
- **Alberta Women's Secretariat** is the central coordinating structure within the Government of Alberta responsible for addressing the wide range of issues which impact on women in the province and promoting the full and equal participation of Alberta women in the social, political, economic and family life of the province.
- **Energy Resources Conservation Board** is responsible for seeing that Alberta's energy resources are developed in a safe, orderly manner and is charged with certain energy resource and environmental management functions related to oil, gas, oil sands, pipelines, electrical energy and coal.
- **Northern Alberta Development Council** is an advisory body to the provincial government charged with investigating, monitoring, evaluating, planning and promoting general development in Northern Alberta.
- **Workers' Compensation Board** serves workers and employers through programs designed to reduce injuries, compensate workers while disabled, and rehabilitate workers to re-employment or self-sufficiency.

# GOVERNMENT OF CANADA

To reach the following federal government departments and agencies, telephone Reference Canada, 1-800-232-9481.

- **Agriculture Canada** is responsible for federal policies, programs and regulations relating to agriculture and food.
- **Consumer & Corporate Affairs Canada** is concerned with the conduct of the marketplace, striving to balance the interests of consumers and business and maintain confidence in private enterprise.
- **Industry, Science & Technology Canada** is responsible for encouraging industry to become more competitive through the application of science and technology and the elimination of internal barriers to trade and economic development.
- **Employment & Immigration Canada**, is responsible for the development and utilization of human resources, and provides employment and immigration services and administers income maintenance benefits.
- **Energy, Mines & Resources Canada** oversees the discovery, development and intelligent use of the country's mineral and energy

resources, and formulates national policies based on social and economic analyses and research in the earth, mineral and metal sciences.

- **Environment Canada** is responsible for protecting and enhancing the quality of the natural environment, including water, soil and air, and the conservation of renewable water, land and wildlife resources.
- **External Affairs and International Trade Canada** is the department which oversees foreign policy and relations with other countries, and promotes Canada's international trade.
- **Indian and Northern Affairs Canada** is responsible for Canada's Indian and Inuit people and for natural resource management in Yukon and Northwest Territories.
- **Department of National Defence** controls and manages the Canadian Armed Forces and all matters relating to national defence, including civil defence, and is responsible for building and maintaining all defence establishments and facilities.
- **Department of Western Economic Diversification** is responsible for identifying and assisting projects of strategic importance to Western Canada, which would not otherwise proceed without federal support.
- **Export Development Corporation** is a Crown corporation which provides insurance and bank guarantee services to Canadian exporters and arranges credit for foreign buyers in order to encourage export trade.
- **Federal Business Development Bank** offers a wide range of financial assistance to new or existing Canadian businesses that lack access to other sources of financing on reasonable terms and conditions.
- **Investment Canada** works with other departments and agencies of the provincial and federal governments to offer information and investment services aimed at encouraging investment in Canada by Canadians and non-Canadians.
- **Canadian International Development Agency**, administered by the Office of the Minister for External Relations & International Development, oversees most Canadian development cooperation programs in line with its goal of helping the peoples and countries of the Third World achieve self-sustaining social and economic development.
- **National Energy Board** regulates specific areas of the oil, gas and electrical industries in the public interest and advises government on energy development and use. ■

# TABLES

## Consolidated Income and Expenditure Accounts, Alberta, 1971-1988 (Millions of Dollars)

| **Income Account** | **1971** | **1976** | **1981** | **1984** | **1985** | **1986** | **1987** | **1988** |
|---|---|---|---|---|---|---|---|---|
| Wages, Salaries, and Supplementary Labour Income* | 3,762 | 8,960 | 21,030 | 24,963 | 26,544 | 27,205 | 27,767 | 30,041 |
| Net Income of Non-farm Unincorp Business Incl Rent | 499 | 829 | 1,425 | 2,169 | 2,360 | 2,535 | 2,696 | 2,864 |
| Accrued Net Income of Farm Operators From Farm Prod | 205 | 603 | 607 | 324 | 359 | 847 | 493 | 1,272 |
| Corporation Profits Before Taxes | 1,091 | 4,041 | 8,514 | 11,659 | 12,416 | 6,417 | 8,611 | 7,786 |
| Interest and Miscellaneous Investment Income | 544 | 2,859 | 8,839 | 11,681 | 12,152 | 9,072 | 8,749 | 9,058 |
| Inventory Valuation Adjustment | -42 | -136 | -650 | -206 | -134 | -40 | -225 | -148 |
| Net Domestic Income at Factor Cost | 6,059 | 17,156 | 39,765 | 50,590 | 53,697 | 46,036 | 48,091 | 50,873 |
| Capital Consumption Allowances | 1,160 | 2,520 | 6,540 | 8,871 | 9,360 | 9,981 | 10,186 | 10,812 |
| Business | 1,021 | 2,246 | 5,960 | 8,043 | 8,484 | 9,049 | 9,213 | 9,813 |
| Government | 139 | 274 | 580 | 828 | 876 | 932 | 973 | 999 |
| Gross Domestic Product at Factor Cost | 7,219 | 19,676 | 46,305 | 59,182 | 63,057 | 56,017 | 58,277 | 61,685 |
| Indirect Taxes | 666 | 1,964 | 3,938 | 4,413 | 4,261 | 3,804 | 4,396 | 4,884 |
| Subsidies | -86 | -257 | -758 | -3,421 | -2,719 | -2,450 | -2,165 | -1,994 |
| Residual | 150 | 522 | 1,139 | -849 | -1,116 | -837 | -1,515 | -1,774 |
| G D P at Market Prices | 7,949 | 21,905 | 50,624 | 59,325 | 63,483 | 56,534 | 58,993 | 62,801 |
| **Expenditure Account** | **1971** | **1976** | **1981** | **1984** | **1985** | **1986** | **1987** | **1988** |
| Personal Expenditure on Consumer Goods & Services | 4,416 | 9,609 | 20,565 | 24,601 | 26,673 | 28,331 | 29,588 | 31,708 |
| Government Current Expenditure on Goods & Services | 1,334 | 3,027 | 6,282 | 9,085 | 9,619 | 9,891 | 10,170 | 10,635 |
| Gross Fixed Capital Formation | 2,236 | 7,295 | 19,440 | 12,584 | 13,874 | 12,668 | 13,126 | 15,668 |
| Government | 271 | 696 | 2,192 | 1,866 | 2,082 | 2,093 | 1,873 | 1,770 |
| Residential Construction | 3 | 3 | 7 | 2 | 2 | 3 | 3 | 5 |
| Non Residential Construction | 238 | 608 | 1,903 | 1,617 | 1,898 | 1,849 | 1,606 | 1,544 |
| Machinery and Equipment | 30 | 85 | 282 | 247 | 182 | 241 | 264 | 221 |
| Business | 1,965 | 6,599 | 17,248 | 10,718 | 11,792 | 10,575 | 11,253 | 13,898 |
| Residential Construction | 526 | 1,842 | 3,416 | 1,501 | 1,616 | 1,664 | 2,014 | 2,312 |
| Non Residential Construction | 887 | 2,425 | 8,697 | 5,791 | 6,791 | 5,713 | 5,674 | 6,942 |
| Machinery and Equipment | 552 | 2,332 | 5,135 | 3,426 | 3,385 | 3,198 | 3,565 | 4,644 |
| Inventories | 2 | 303 | 68 | -262 | 80 | 764 | 156 | 455 |
| Non-farm | 28 | 257 | 118 | 121 | 188 | 231 | 215 | 225 |
| Farm | -6 | 64 | 11 | -369 | 0 | 454 | -65 | 259 |
| Grain in Commercial Channels | -20 | -18 | -61 | -14 | -108 | 79 | 6 | -29 |
| Exports out of Alberta | 2,939 | 9,886 | 23,789 | 30,038 | 31,304 | 22,168 | 23,580 | 23,721 |
| Imports into Alberta | -2,829 | -7,693 | -18,381 | -17,571 | -19,183 | -18,126 | -19,142 | -21,160 |
| Residual | -149 | -522 | -1,139 | 850 | 1,116 | 838 | 1,515 | 1,774 |
| G D P at Market Prices | 7,949 | 21,905 | 50,624 | 59,325 | 63,483 | 56,534 | 58,993 | 62,801 |

* Includes Military Pay and Allowances

[illegible]

## Gross Domestic Product in Constant (1981) Dollars, Alberta, 1971-1988 (Millions of Dollars)

Table 1.2

| | 1971 | 1976 | 1981 | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|---|---|---|
| Personal Expenditure on Consumer Goods & Services | 10,591 | 15,574 | 20,565 | 20,594 | 21,657 | 22,220 | 22,286 | 23,262 |
| Government Current Expenditure on Goods & Services | 3,538 | 4,890 | 6,282 | 7,335 | 7,519 | 7,489 | 7,400 | 7,431 |
| Gross Fixed Capital Formation | 6,126 | 11,635 | 19,440 | 12,180 | 13,110 | 12,060 | 12,730 | 15,042 |
| Government | 688 | 1,056 | 2,192 | 1,831 | 2,018 | 2,050 | 1,888 | 1,737 |
| Business | 5,443 | 10,592 | 17,248 | 10,349 | 11,092 | 10,010 | 10,842 | 13,305 |
| Residential Construction | 1,516 | 2,583 | 3,416 | 1,496 | 1,588 | 1,585 | 1,862 | 2,091 |
| Non-residential Construction | 2,640 | 4,048 | 8,697 | 5,552 | 6,253 | 5,334 | 5,318 | 6,171 |
| Machinery and Equipment | 1,333 | 3,798 | 5,135 | 3,301 | 3,251 | 3,091 | 3,662 | 5,043 |
| Adjusting Entry | -46 | 163 | 0 | 0 | 0 | 0 | 0 | 0 |
| Adjusting Entry | -5 | -13 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Domestic Demand | 20,477 | 32,303 | 46,287 | 40,109 | 42,286 | 41,769 | 42,416 | 45,735 |
| Inventories | -143 | 498 | 68 | -312 | 38 | 961 | 8 | -113 |
| Non-farm | 72 | 422 | 118 | 105 | 157 | 188 | 171 | 174 |
| Farm | -94 | 89 | 11 | -410 | 28 | 675 | -193 | -190 |
| Grain in Commercial Channels | -121 | -13 | -61 | -7 | -147 | 98 | 30 | -97 |
| Exports out of Alberta | 16,148 | 19,346 | 23,789 | 24,791 | 25,287 | 24,123 | 26,255 | 29,010 |
| Imports into Alberta | -7,425 | -13,196 | -18,381 | -15,730 | -16,878 | -15,512 | -16,437 | -18,106 |
| Residual | -534 | -903 | -1,139 | 711 | 908 | 769 | 1,381 | 1,659 |
| Adjusting Entry | -1,668 | -1,356 | 0 | 0 | 0 | 0 | 0 | 0 |
| G.D.P. in Constant (1981) Dollars | 26,855 | 36,692 | 50,624 | 49,569 | 51,641 | 52,110 | 53,623 | 58,185 |

Source: Alberta Bureau of Statistics

## Gross Domestic Products at Factor Cost, Alberta, 1971-1988 (Millions of Dollars)

Table 1.3

| | 1971 | 1976 | 1981 | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|---|---|---|
| Agriculture | 412 | 1,115 | 1,814 | 1,335 | 1,745 | 2,264 | 2,035 | 2,817 |
| Forestry | 16 | 44 | 102 | 131 | 143 | 151 | 167 | 178 |
| Mining | 1,078 | 3,748 | 9,315 | 14,586 | 15,477 | 9,120 | 10,554 | 9,893 |
| Manufacturing | 658 | 1,514 | 3,744 | 4,299 | 4,586 | 4,620 | 4,966 | 5,486 |
| Construction | 561 | 1,619 | 4,155 | 2,852 | 2,861 | 2,845 | 3,048 | 3,460 |
| Transportation | 656 | 1,389 | 2,942 | 3,545 | 3,749 | 3,938 | 4,108 | 4,294 |
| Utilities | 150 | 418 | 1,019 | 1,766 | 1,917 | 1,921 | 2,028 | 2,184 |
| Trade | 779 | 1,816 | 3,779 | 4,786 | 5,168 | 5,492 | 5,585 | 6,138 |
| Finance | 1,036 | 3,747 | 10,028 | 13,397 | 14,130 | 11,825 | 11,362 | 11,786 |
| Finance-excluding Natural Resource Royalties | 800 | 1,950 | 5,955 | 8,341 | 9,217 | 9,238 | 9,346 | 9,713 |
| Services | 1,411 | 3,191 | 7,235 | 9,546 | 10,241 | 10,669 | 11,216 | 12,116 |
| Public Administration | 462 | 1,076 | 2,173 | 2,941 | 3,040 | 3,172 | 3,210 | 3,332 |
| Gross Domestic Product at Factor Cost | 7,219 | 19,676 | 46,305 | 59,182 | 63,057 | 56,017 | 58,277 | 61,685 |

Source Alberta Bureau of Statistics

## Comparison of Gross Domestic Product, Alberta and Canada, 1961-1988

| | Gross Domestic Product (Millions of Dollars) | | Alberta G.D.P. As Percent Of Canada | Per Capita G.D.P | |
|---|---|---|---|---|---|
| **Year** | **Alberta** | **Canada** | | **Alberta** | **Canada** |
| 1961 | 3,313 | 40,886 | 8.1 | 2,487 | 2,242 |
| 1962 | 3,516 | 44,408 | 7.9 | 2,568 | 2,390 |
| 1963 | 3,800 | 47,678 | 8.0 | 2,708 | 2,519 |
| 1964 | 4,035 | 52,191 | 7.7 | 2,824 | 2,706 |
| 1965 | 4,477 | 57,523 | 7.8 | 3,088 | 2,928 |
| 1966 | 5,082 | 64,388 | 7.9 | 3,474 | 3,217 |
| 1967 | 5,429 | 69,064 | 7.9 | 3,644 | 3,389 |
| 1968 | 5,939 | 75,418 | 7.9 | 3,897 | 3,643 |
| 1969 | 6,566 | 83,026 | 7.9 | 4,212 | 3,953 |
| 1970 | 7,182 | 89,116 | 8.1 | 4,503 | 4,184 |
| 1971 | 7,949 | 97,290 | 8.2 | 4,883 | 4,511 |
| 1972 | 9,095 | 108,629 | 8.4 | 5,489 | 4,983 |
| 1973 | 11,414 | 127,372 | 9.0 | 6,734 | 5,778 |
| 1974 | 16,015 | 152,111 | 10.5 | 9,300 | 6,802 |
| 1975 | 18,978 | 171,540 | 11.1 | 10,674 | 7,558 |
| 1976 | 21,905 | 197,924 | 11.1 | 11,918 | 8,608 |
| 1977 | 24,767 | 217,879 | 11.4 | 12,947 | 9,362 |
| 1978 | 28,860 | 241,604 | 11.9 | 14,554 | 10,274 |
| 1979 | 35,923 | 276,096 | 13.0 | 17,498 | 11,627 |
| 1980 | 43,351 | 309,891 | 14.0 | 20,248 | 12,889 |
| 1981 | 50,624 | 355,994 | 14.2 | 22,630 | 14,625 |
| 1982 | 53,711 | 374,442 | 14.3 | 23,201 | 15,232 |
| 1983 | 55,169 | 405,717 | 13.6 | 23,587 | 16,368 |
| 1984 | 59,325 | 444,735 | 13.3 | 25,363 | 17,805 |
| 1985 | 63,483 | 477,998 | 13.3 | 27,026 | 18,994 |
| 1986 | 56,534 | 504,631 | 11.2 | 23,804 | 19,904 |
| 1987 | 58,993 | 550,334 | 10.7 | 24,808 | 21,483 |
| 1988 | 62,801 | 601,508 | 10.4 | 26,222 | 23,213 |

[illegible]

## Personal Income, Alberta, 1971-1988 (Millions of Dollars)

| | **1971** | **1976** | **1981** | **1984** | **1985** | **1986** | **1987** | **1988** |
|---|---|---|---|---|---|---|---|---|
| Wages, Salaries and Supplementary Labour Income | 3,678 | 8,813 | 20,859 | 24,718 | 26,301 | 26,950 | 27,493 | 29,758 |
| Military Pay and Allowances | 84 | 147 | 171 | 245 | 243 | 255 | 274 | 283 |
| Net Income - Non-farm Unincorp. Business Incl Rent | 499 | 829 | 1,425 | 2,169 | 2,360 | 2,535 | 2,696 | 2,864 |
| Net Income Received by Farm Operators from Farming | 210 | 472 | 545 | 13 | 231 | 775 | 532 | 1,138 |
| Interest, Dividends and Misc. Investment Income | 375 | 1,176 | 4,882 | 5,592 | 6,128 | 5,730 | 6,188 | 6,939 |
| Current Transfers, from Corporations | 12 | 27 | 59 | 54 | 50 | 56 | 57 | 59 |
| From Govt - to Persons | 632 | 1,299 | 2,620 | 5,036 | 5,434 | 5,941 | 6,106 | 6,388 |
| From Govt - Capital Assistance | 1 | 28 | 44 | 102 | 43 | 36 | 34 | 11 |
| From Non-residents | 13 | 22 | 50 | 59 | 64 | 72 | 76 | 78 |
| Personal Income (Income Account) | 5,504 | 12,813 | 30,655 | 37,988 | 40,854 | 42,350 | 43,456 | 47,518 |
| Plus: Adjustment on Grain Transactions | -5 | 131 | 62 | 32 | 128 | 72 | -39 | 134 |
| Equals: Total Income | 5,499 | 12,944 | 30,717 | 38,020 | 40,982 | 42,422 | 43,417 | 47,652 |

[illegible]

## rivate and Public Investment, Alberta, 1971-1989 (Millions of Dollars)

| | Primary Industries & Construction | Manufacturing | Utilities | Trade, Finance & Commercial Services | Housing | Institutions & Government Depts | Capital and Repair Expenditures | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Construction | Machinery & Equip. | |
| 1971 | 946.1 | 186.5 | 471.6 | 179.7 | 492.3 | 442.0 | 1,845.8 | 872.4 | 2,718.2 |
| 1972 | 1,006.9 | 245.9 | 500.7 | 280.2 | 538.1 | 426.1 | 1,979.4 | 1,018.5 | 2,997.9 |
| 1973 | 1,252.5 | 394.1 | 557.2 | 404.4 | 587.6 | 471.9 | 2,333.8 | 1,333.9 | 3,667.7 |
| 1974 | 1,692.1 | 415.9 | 796.6 | 471.3 | 694.1 | 636.2 | 2,961.3 | 1,744.9 | 4,706.2 |
| 1975 | 2,290.6 | 441.0 | 1,086.9 | 559.5 | 849.4 | 825.3 | 3,920.6 | 2,132.1 | 6,052.7 |
| 1976 | 3,084.1 | 591.7 | 1,344.9 | 725.9 | 1,699.8 | 807.6 | 5,197.5 | 3,056.5 | 8,254.0 |
| 1977 | 3,523.0 | 661.3 | 1,410.1 | 894.3 | 1,833.4 | 971.4 | 6,124.5 | 3,169.0 | 9,293.5 |
| 1978 | 4,015.0 | 910.4 | 1,436.8 | 1,252.3 | 2,426.8 | 1,109.0 | 7,411.5 | 3,738.8 | 11,150.3 |
| 1979 | 5,385.4 | 1,072.0 | 1,671.4 | 1,994.7 | 2,647.0 | 1,412.6 | 9,373.8 | 4,809.3 | 14,183.1 |
| 1980 | 7,154.1 | 979.4 | 2,285.8 | 2,261.7 | 2,479.2 | 1,843.3 | 11,694.4 | 5,309.1 | 17,003.5 |
| 1981 | 8,011.8 | 2,297.0 | 3,035.8 | 2,960.2 | 2,830.0 | 2,726.2 | 14,491.0 | 7,370.0 | 21,861.0 |
| 1982 | 7,340.9 | 2,881.5 | 3,105.0 | 2,486.1 | 2,319.4 | 3,511.7 | 14,402.9 | 7,241.7 | 21,644.6 |
| 1983 | 6,063.4 | 1,938.1 | 2,633.9 | 1,847.0 | 1,809.4 | 2,874.8 | 11,081.9 | 6,084.7 | 17,166.6 |
| 1984 | 6,598.3 | 1,125.4 | 2,434.7 | 1,650.4 | 1,159.9 | 2,392.7 | 9,530.5 | 5,830.9 | 15,361.4 |
| 1985 | 7,804.0 | 861.8 | 2,432.4 | 1,920.8 | 1,616.0 | 2,573.9 | 11,275.3 | 5,933.6 | 17,208.9 |
| 1986 | 6,029.7 | 999.8 | 2,369.2 | 2,260.5 | 1,760.4 | 2,729.9 | 10,349.2 | 5,800.3 | 16,149.5 |
| 1987 | 5,972.0 | 1,042.7 | 2,572.3 | 2,616.1 | 1,959.7 | 2,618.4 | 10,489.9 | 6,291.3 | 16,781.2 |
| 1988 | 7,306.3 | 1,561.4 | 3,049.0 | 2,721.8 | 2,259.5 | 2,490.2 | 11,787.1 | 7,601.1 | 19,388.2 |
| 1989 | 6,415.4 | 2,081.1 | 3,344.7 | 2,498.8 | 2,632.9 | 2,683.6 | 11,794.3 | 7,861.9 | 19,656.5 |

Source: Statistics Canada, Private and Public Investment in Canada Cat. No's 61-205 and 61-206

## Alberta Heritage Savings Trust Fund, Distribution of Assets. 1977-1988 (Millions of Dollars)

| **As at March 31** | **1977** | **1978** | **1979** | **1980** | **1981** | **1982** | **1983** | **1984** | **1985** | **1986** | **1987** | **1988** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Financial Assets | | | | | | | | | | | | |
| Alberta Investment Division | 1,551 | 2,266 | 3,157 | 3,140 | 4,524 | 6,335 | 8,158 | 8,079 | 8,151 | 8,177 | 7,847 | 7,520 |
| Investments in Provincial Crown Corporations | 1,254 | 1,817 | 2,629 | 2,649 | 4,003 | 5,783 | 7,603 | 7,409 | 7,421 | 7,520 | 7,134 | 6,384 |
| Other Investments | 297 | 449 | 528 | 491 | 521 | 552 | 555 | 670 | 730 | 657 | 713 | 936 |
| Capital Projects Division | – | – | – | – | – | – | – | 200[a] | 200[a] | 200[a] | 200[a] | 200[a] |
| Energy Investment Division | | – | – | – | 25 | 25 | 25 | 25 | 24 | 16 | 9 | 1 |
| Canada Investment Division | 50 | 96 | 270 | 929 | 1,492 | 1,909 | 1,903 | 1,896 | 1,870 | 1,864 | 1,857 | 1,487 |
| Commercial Investment Division | – | | – | – | – | 189 | 199 | 199 | 201 | 217 | 233 | 263 |
| Deposits and Marketable Securities and Other Assets | 581 | 889 | 1,023 | 1,617 | 1,577 | 1,242 | 1,112 | 1,378 | 1,828 | 2,242 | 2,599 | 3,108 |
| Total Financial Assets | 2,182 | 3,251 | 4 450 | 5,686 | 7,618 | 9,700 | 11,397 | 11,777 | 12,274 | 12,716 | 12,745 | 12,562 |
| Deemed Assets– Capital Projects Division | 36 | 123 | 255 | 733 | 961 | 1,309 | 1,605 | 1,935 | 2,162 | 2,402 | 2,629 | 2,758 |
| **TOTAL** | **2,218** | **3,374** | **4,705** | **6,419** | **8,579** | **11,009** | **13,002** | **13,712** | **14,436** | **15,118** | **15,374** | **15,320** |

a) Investment in Vencap Equities Alberta Ltd

[illegible]

## Chartered Banks: Assets and Liabilities in Alberta. 1971-1988 (Millions of Dollars)

| | | **Assets** | | | **Liabilities** | |
|---|---|---|---|---|---|---|
| **As On 31 March** | **Total** | **Residential Mortgages** | **Business Loans** | **Fixed Total** | **Term Deposits** | **Personal Savings** |
| 1982 | 41,757 | 4,581 | 17,386 | 22,717 | 4,743 | 9,851 |
| 1983 | 45,041 | 4,658 | 17,645 | 22,910 | 4,593 | 10,275 |
| 1984 | 42 968 | 4,514 | 15,822 | 22,213 | 4,424 | 10,330 |
| 1985 | 43,615 | 4,940 | 15,929 | 22,455 | 5,063 | 11,328 |
| 1986 | 43 476 | 5,292 | 15,663 | 24,756 | 5,346 | 12,088 |
| 1987 | 39 866 | 5,533 | 10,978 | 27,126 | 5,504 | 12,837 |
| 1988 | 36 926 | 6,008 | 10,159 | 26,936 | 5,732 | 13,488 |

[illegible]

## Alberta Stock Exchange Volumes For the Twelve Months Ended December 31,1988

Table 1.3

| | Share Volume | | Dollar Value | |
|---|---|---|---|---|
| | **1988** | **1987** | **1988** | **1987** |
| January | 48,444,707 | 47,273,841 | 32,810,239 | 59,942,121 |
| February | 51,225,745 | 45,721,347 | 38,489,597 | 59,186,045 |
| March | 61,282,639 | 62,951,658 | 46,310,533 | 117,042,349 |
| April | 58,677,069 | 80,888,398 | 53,486,826 | 116,204,869 |
| May | 59,203,320 | 67,533,351 | 42,777,455 | 101,075,436 |
| June | 69,865,078 | 60,983,201 | 53,469,763 | 86,169,955 |
| July | 53,730,723 | 59,490,552 | 33,014,812 | 88,334,160 |
| August | 58,546,894 | 73,889,859 | 30,991,555 | 90,225,619 |
| September | 58,586,140 | 85,513,334 | 28,429,313 | 100,981,290 |
| October | 50,517,723 | 68,814,338 | 27,944,051 | 75,704,214 |
| November | 69,913,957 | 46,121,894 | 44,427,624 | 31,496,842 |
| December | 54,265,779 | 41,487,602 | 31,824,482 | 45,269,411 |
| **TOTAL** | **694,259,774** | **740,669,375** | **463,976,250** | **971,632,311** |

Source Alberta Stock Exchange, Annual Report 1988

# MANUFACTURING

## Value of Manufacturers' Factory Shipments, by Industry Groups, Alberta, 1971-1988 (Millions of Dollars)

| | 1971 | 1976 | 1981 | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|---|---|---|
| Food | 835 | 1,715 | 3,294 | 3,581 | 3,538 | 3,406 | 3,848 | 4,162 |
| Beverages | – | – | 295 | 329 | 335 | 362 | 359 | 385 |
| Wood | 128 | 296 | 511 | 539 | 556 | 640 | 646 | 714 |
| Furniture & Fixtures | 20 | 55 | 131 | 99 | 108 | 134 | 153 | 162 |
| Paper & Allied Products | 61 | 197 | 365 | 452 | 462 | 453 | 536 | 588 |
| Printing Publishing & Allied Prod | 69 | 163 | 455 | 521 | 569 | 627 | 656 | 724 |
| Primary Metals | 126 | 270 | 794 | 795 | 866 | 720 | 817 | 1,197 |
| Fabricated Metal Products | 137 | 321 | 786 | 615 | 781 | 805 | 850 | 974 |
| Machinery (Except Electrical) | 41 | 150 | 693 | 543 | 756 | 612 | 675 | 921 |
| Non-metallic Mineral Products | 120 | 299 | 721 | 490 | 523 | 583 | 592 | 571 |
| Refined Petroleum & Coal Products | 205 | 914 | 2,835 | 4,317 | 5,102 | 3,119 | 3,151 | 2,713 |
| Chemical & Chemical Products | 124 | 312 | 1,472 | 2,096 | 2,543 | 2,555 | 2,787 | 3,258 |
| Others | 214 | 516 | 889 | 911 | 1,041 | 1,630 | 1,243 | 1,556 |
| **TOTAL** | **2,081** | **5,208** | **13,241** | **15,288** | **17,180** | **15,646** | **16,313** | **17,925** |

[illegible]

## Value of Alberta Manufacturing Shipments, 1987-1989 (Thousands of Dollars)

| Industry | Value of Shipments 1987 (Actual) | Value of Shipments 1988 (Actual) | 87/88 % Change | Value of Shipments 1989 (Estimate) | 88/89 % Change |
|---|---|---|---|---|---|
| Food Processing | 3,848,262 | 4,161,675 | 8 | 4,156,934 | -.01 |
| Beverage | 358,730 | 385,270 | 7 | 375,199 | -3 |
| Furniture & Fixtures | 153,083 | 161,737 | 6 | 182,919 | 13 |
| Wood | 646,004 | 714,244 | 11 | 748,079 | 5 |
| Paper & Allied Products | 535,947 | 588,310 | 10 | 566,148 | -4 |
| Printing & Publishing | 655,682 | 724,338 | 11 | 782,610 | 8 |
| Primary Metals | 817,441 | 1,196,597 | 46 | 1,192,289 | -0.4 |
| Fabricated Metal Products | 850,303 | 974,391 | 15 | 1,089,108 | 12 |
| Machinery* | 675,000 | 921,000 | 36 | 967,000 | 5 |
| Non-Metallic Mineral Products | 592,168 | 570,767 | -4 | 551,237 | -3 |
| Refined Petroleum Products | 3,151,171 | 2,713,383 | -14 | 2,813,047 | 4 |
| Chemicals & Chemical Products | 2,786,893 | 3,258,384 | 17 | 3,344,369 | 3 |
| Plastics* | 270,770 | 295,120 | 9 | 325,000 | 10 |
| Electronics* | 620,000 | 700,000 | 13 | 770,000 | 10 |
| Other Manufacturing | 351,733 | 559,608 | 36 | 585,462 | 5 |
| **TOTAL** | **16,313,187** | **17,924,824** | **10** | **18,449,401** | **3** |

* Estimated by Economic Development & Trade

[illegible]

# AGRICULTURE

## Farm Cash Receipts From Farming Operations, Alberta, 1971-1988 (Millions of Dollars)

| | 1971 | 1976 | 1981 | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|---|---|---|
| Total Cash Receipts | 813.6 | 1,896.7 | 3,849.9 | 3,983.6 | 3,830.2 | 3,760.8 | 4,012.5 | 4,440.8 |
| Total Crops | 334.9 | 886.0 | 2,049.7 | 1,857.4 | 1,543.7 | 1,316.9 | 1,300.5 | 1,634.2 |
| Wheat - Excluding Durum | 128.9 | 319.3 | 858.8 | 860.2 | 534.8 | 410.0 | 514.9 | 554.5 |
| Durum Wheat | 0.0 | 32.9 | 59.1 | 43.5 | 27.8 | 34.5 | 41.6 | 65.9 |
| Oats | 8.2 | 24.2 | 24.9 | 24.0 | 17.6 | 16.3 | 19.2 | 62.2 |
| Barley | 77.9 | 213.4 | 414.2 | 291.8 | 199.2 | 300.6 | 226.6 | 248.1 |
| Rye | 2.4 | 8.8 | 29.9 | 14.0 | 4.7 | 4.6 | 4.7 | 8.0 |
| Flaxseed | 12.5 | 12.4 | 16.0 | 7.0 | 7.3 | 5.5 | 6.0 | 7.6 |
| Canola | 45.7 | 80.5 | 278.7 | 399.5 | 342.6 | 267.8 | 314.5 | 454.7 |
| Sugar Beets | 10.6 | 20.8 | 38.3 | 17.8 | 3.3 | 9.0 | 12.7 | 19.4 |
| Potatoes | 7.7 | 13.5 | 22.3 | 25.1 | 27.2 | 30.8 | 35.3 | 39.8 |
| Vegetables | 2.9 | 7.5 | 15.7 | 23.6 | 25.9 | 29.3 | 29.6 | 30.9 |
| Floriculture and Nursery | 3.2 | 11.7 | 23.1 | 23.3 | 24.2 | 23.5 | 29.0 | 34.3 |
| Other Crops | 8.6 | 19.9 | 42.8 | 39.7 | 43.3 | 69.8 | 60.2 | 82.3 |
| Other Sources* | 26.5 | 121.1 | 225.9 | 88.0 | 285.6 | 115.3 | 6.2 | 26.5 |
| Total Livestock and Products | 462.9 | 927.5 | 1,701.1 | 1,794.5 | 1,810.9 | 1,782.8 | 1,906.5 | 2,058.4 |
| Cattles & Calves | 290.3 | 637.9 | 1,180.1 | 1,163.6 | 1,181.4 | 1,111.8 | 1,218.4 | 1,394.9 |
| Hogs | 78.6 | 111.3 | 189.6 | 244.1 | 248.3 | 278.4 | 284.1 | 247.3 |
| Sheep & Lamb | 1.7 | 4.2 | 4.0 | 7.7 | 6.8 | 6.7 | 7.5 | 6.4 |
| Dairy Products | 46.8 | 92.7 | 174.0 | 214.0 | 215.6 | 223.7 | 221.1 | 238.2 |
| Poultry | 22.1 | 40.4 | 78.3 | 91.9 | 88.6 | 85.4 | 93.8 | 89.7 |
| Eggs | 13.9 | 25.3 | 43.1 | 42.0 | 41.4 | 42.0 | 42.0 | 44.1 |
| Other Livestock Products | 9.5 | 15.7 | 32.0 | 31.2 | 28.8 | 34.8 | 39.6 | 37.8 |
| Total Direct Payments | 15.8 | 83.2 | 99.2 | 331.6 | 475.7 | 661.1 | 805.5 | 748.2 |
| Crop Insurance Payments | 2.4 | 19.6 | 31.1 | 202.6 | 251.2 | 160.1 | 135.4 | 173.4 |
| Western Grain Stabilization Payments | 0.0 | 0.0 | 0.0 | 59.3 | 138.3 | 225.4 | 368.0 | 179.6 |
| ASA - Price Stabilization | 0.6 | 3.5 | 13.8 | 10.2 | 2.1 | 0.0 | 7.4 | 5.0 |
| ASA - Tripartite Plans | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.9 | 1.0 | 56.8 |
| Provincial Stabilization Programs | 0.0 | 41.9 | 4.3 | 22.2 | 11.1 | 31.0 | 0.0 | 0.0 |
| Dairy Subsidy | 6.7 | 17.3 | 17.3 | 19.5 | 18.6 | 18.9 | 18.8 | 19.0 |
| Other Payments | 6.0 | 0.9 | 32.7 | 17.8 | 54.3 | 223.7 | 274.9 | 314.5 |

* Includes Canada Wheat Board Payments, Deferred Grain Receipts and Liquidation of Deferred Grain Receipts.

Source. Statistics Canada - Agriculture Economic Statistics Cat No 21-202

## umber of Farms, Area, Size, Tenure, Sales, Alberta, 1986

| | Alberta | CD 1 | CD 2 | CD 3 | CD 4 | CD 5 | CD 6 | CD 7 | CD 8 | CD 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| Total No of Farms | 57,777 | 1,796 | 3,852 | 2,178 | 1,598 | 3,234 | 4,363 | 3,726 | 4,439 | 1,225 |
| Total Area of Farms (Acres) | 51,040 463 | 4,193 950 | 4,205 753 | 2 665,799 | 4,994,310 | 3 857 068 | 3,057,408 | 4,555,790 | 2,257,809 | 729,718 |
| Average Farm Size (Acres) | 883 | 2,335 | 1,092 | 1,224 | 3,125 | 1,193 | 701 | 1,223 | 509 | 596 |
| Operators Classified by Tenure: (No.) | | | | | | | | | | |
| Owner-Operator | 30,267 | 728 | 2,059 | 1,086 | 304 | 1,307 | 2,450 | 1,578 | 2,569 | 686 |
| Tenant | 4,060 | 144 | 354 | 175 | 131 | 343 | 416 | 311 | 320 | 61 |
| Part Owner, Part Tenant | 23,450 | 924 | 1,439 | 917 | 1,163 | 1,584 | 1,497 | 1,837 | 1,550 | 478 |
| No of Farms Reporting 1985 Sales of | | | | | | | | | | |
| Under $2,500 | 6,034 | 84 | 210 | 197 | 36 | 115 | 545 | 147 | 380 | 212 |
| $2,500 - $4,999 | 4,047 | 44 | 109 | 126 | 40 | 82 | 323 | 145 | 240 | 99 |
| $5,000 - $9,999 | 5,697 | 81 | 190 | 182 | 76 | 158 | 415 | 253 | 401 | 155 |
| $10,000 - $24,999 | 10,244 | 191 | 410 | 365 | 203 | 334 | 769 | 521 | 790 | 271 |
| $25,000 - $49,999 | 9,842 | 333 | 622 | 336 | 303 | 549 | 625 | 610 | 740 | 199 |
| $50,000 - $99,999 | 10,549 | 517 | 930 | 405 | 461 | 882 | 722 | 926 | 833 | 169 |
| $100,000 - $249,999 | 8,550 | 412 | 925 | 368 | 382 | 851 | 665 | 865 | 756 | 106 |
| $250,000 - $499,999 | 1,889 | 84 | 254 | 114 | 64 | 178 | 189 | 192 | 205 | 11 |
| $500 000 and Over | 925 | 50 | 202 | 85 | 33 | 85 | 110 | 67 | 94 | 3 |

## Table 3.2 continued

| | CD 10 | CD 11 | CD 12 | CD 13 | CD 14 | CD 15 | CD 16 | CD 17 | CD 18 | CD 19 |
|---|---|---|---|---|---|---|---|---|---|---|
| Total No of Farms | 6,792 | 7,029 | 2,246 | 5,363 | 857 | – | 822 | 3,230 | 829 | 4,198 |
| Total Area of Farms (Acres) | 4,764,317 | 2,798,593 | 1,618,484 | 3,009 595 | 484,697 | – | 805,606 | 2,771,108 | 707,900 | 3,562,558 |
| Average Farm Size (Acres) | 701 | 398 | 721 | 561 | 566 | – | 980 | 858 | 854 | 849 |
| Operators Classified by Tenure (No ) | | | | | | | | | | |
| Owner-Operator | 3,441 | 4,170 | 1,224 | 3,241 | 498 | Mountain | 352 | 1,774 | 493 | 2,307 |
| Tenant | 501 | 447 | 90 | 215 | 33 | Parks | 53 | 208 | 40 | 218 |
| Part Owner, Part Tenant | 2,850 | 2,412 | 932 | 1,907 | 326 | – | 417 | 1,248 | 296 | 1,673 |
| No of Farms Reporting 1985 Sales of | | | | | | | | | | |
| Under $2,500 | 512 | 1,045 | 318 | 693 | 224 | – | 172 | 506 | 179 | 459 |
| $2 500 - $4 999 | 398 | 740 | 215 | 505 | 145 | – | 120 | 317 | 108 | 291 |
| $5 000 - $9 999 | 674 | 942 | 251 | 679 | 138 | – | 128 | 411 | 109 | 454 |
| $10 000 - $24,999 | 1,305 | 1,501 | 517 | 1,120 | 154 | – | 157 | 699 | 169 | 768 |
| $25 000 - $49 999 | 1,266 | 1,078 | 381 | 1,033 | 105 | – | 131 | 575 | 129 | 827 |
| $50 000 - $99 999 | 1,354 | 828 | 290 | 732 | 54 | – | 83 | 459 | 87 | 817 |
| $100 000 - $249 999 | 1,040 | 669 | 218 | 472 | 28 | – | 29 | 228 | 39 | 497 |
| $250,000 - $499 999 | 190 | 158 | 47 | 94 | 2 | – | 2 | 31 | 6 | 68 |
| $500 000 and Over | 53 | 68 | 9 | 35 | 7 | | – | 4 | 3 | 17 |

CD – Census Division

[illegible]

## Animal Slaughterings in Federally Inspected Establishments, Alberta, 1971-1988

| | Cattle | Calves | Hogs | Sheep and Lambs |
|---|---|---|---|---|
| 1971 | 1,015,967 | 17,879 | 1,972,024 | 45,199 |
| 1976 | 1,537,610 | 45,539 | 1,088,959 | 75,996 |
| 1981 | 1,294,827 | 8,009 | 1,686,835 | 56,849 |
| 1984 | 1,261,027 | 5,786 | 1,497,612 | 111,577 |
| 1985 | 1,270,408 | 6,160 | 1,655,904 | 89,093 |
| 1986 | 1,126,256 | 6,603 | 1,530,047 | 81,500 |
| 1987 | 1,135,084 | 6,686 | 1,715,083 | 69,019 |
| 1988 | 1,209,997 | 6,183 | 1,509,465 | 75,512 |

Source Alberta Agriculture

## Income of Farm Operators from Farm Operations, Alberta, 1971-1988 (Millions of Dollars)

| | 1971 | 1976 | 1981 | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|---|---|---|
| Total Cash Receipts | 813.6 | 1,896.7 | 3,849.9 | 3,983.6 | 3,830.2 | 3,760.8 | 4,012.5 | 4,440.8 |
| Operating Expenses After Rebates | 490.9 | 1,185.2 | 2,628.9 | 2,904.8 | 2,902.3 | 2,750.6 | 2,728.9 | 2,873.5 |
| Net Cash Income | 322.7 | 711.5 | 1,221.0 | 1,078.8 | 927.9 | 1,010.2 | 1,283.6 | 1,567.3 |
| Income in Kind | 16.1 | 20.6 | 23.4 | 19.8 | 19.0 | 19.2 | 21.6 | 21.4 |
| Depreciation Charges | 120.3 | 309.8 | 672.0 | 676.4 | 668.7 | 669.9 | 666.2 | 666.7 |
| Realized Net Income | 218.5 | 422.4 | 572.4 | 422.2 | 278.1 | 359.4 | 639.0 | 922.0 |
| Value of Inventory Change | -1.7 | 97.0 | 117.4 | -320.2 | -25.5 | 499.1 | -28.4 | 13.5 |
| Total Net Income | 216.7 | 519.4 | 689.8 | 102.0 | 252.6 | 858.6 | 610.6 | 935.5 |

Source Statistics Canada Agriculture Economic Statistics, Cat No 21-603E and Alberta Agriculture

## Farm Operating Expenses and Depreciation Charges, Alberta, 1971-1988 (Millions of Dollars)

| | 1971 | 1976 | 1981 | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|---|---|---|
| Net Property Taxes | 20.9 | 31.3 | 56.1 | 65.6 | 66.6 | 71.3 | 69.0 | 69.2 |
| Cash and Share Rent | 31.4 | 75.2 | 169.6 | 197.9 | 183.0 | 179.0 | 140.9 | 160.2 |
| Cash Wages and RM & BD | 39.5 | 81.7 | 164.5 | 224.4 | 255.0 | 267.7 | 289.5 | 272.4 |
| Net Interest | 57.5 | 159.4 | 545.2 | 426.8 | 413.2 | 412.7 | 418.6 | 434.0 |
| Machinery Repair & Other Expenses | 130.6 | 262.6 | 523.4 | 568.0 | 594.2 | 463.1 | 492.5 | 489.7 |
| Fertilizer and Lime | 30.0 | 107.2 | 280.3 | 336.1 | 319.0 | 286.5 | 248.7 | 252.4 |
| Other Crop Expenses | 22.3 | 59.8 | 148.7 | 208.8 | 219.8 | 217.0 | 200.7 | 204.4 |
| Commercial Feed | 50.7 | 143.3 | 274.9 | 326.1 | 317.3 | 255.2 | 193.7 | 272.6 |
| Other Livestock Expenses | 25.6 | 71.5 | 151.9 | 177.9 | 159.8 | 184.1 | 264.2 | 285.4 |
| Repairs to Buildings | 12.4 | 38.7 | 50.7 | 45.4 | 45.7 | 52.6 | 66.0 | 68.7 |
| Electricity and Telephone | 21.4 | 34.0 | 52.4 | 60.2 | 65.7 | 72.0 | 67.3 | 69.1 |
| Miscellaneous | 48.6 | 120.5 | 211.3 | 267.8 | 262.9 | 289.3 | 277.8 | 295.4 |
| Operating Expenses After Rebates | 490.9 | 1,185.2 | 2,628.9 | 2,904.8 | 2,902.3 | 2,750.6 | 2,728.9 | 2,873.5 |
| Total Depreciation | 120.3 | 309.8 | 672.0 | 676.4 | 668.7 | 669.9 | 666.2 | 666.7 |
| Depreciation on Buildings | 16.0 | 47.0 | 126.2 | 101.3 | 93.4 | 84.3 | 80.4 | 78.3 |
| Depreciation on Machinery | 104.3 | 262.8 | 545.9 | 575.1 | 575.3 | 585.6 | 585.8 | 588.4 |
| Total Expenses After Rebates | 611.2 | 1,495.0 | 3,300.9 | 3,581.2 | 3,571.0 | 3,420.6 | 3,395.1 | 3,540.2 |

Source Statistics Canada Agriculture Economic Statistics Cat No 21-603E

## Volume and Value of Mineral Production, Alberta, Specified Years 1971, 1981, 1985-1988

| | Units | 1971 | 1981 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|---|---|
| **Fuels** | | | | | | | |
| Coal | '000 Tonnes | 7,269 | 18 446 | 24,730 | 24,950 | 25,738 | 29,270 |
| | $ 000 | 42 418 | 325,750 | 447,760 | 445,579 | 389,650 | 456,000 |
| Natural Gas | 000,000 $M^3$ | 58,243 | 64,306 | 73,792 | 62,556 | 67,029 | 76,308 |
| | $ 000 | 290,672 | 5,993,990 | 7,305,388 | 5,048,927 | 4,021,746 | 4,415,169 |
| Natural Gas By-Products | 000 $M^3$ | 13,056 | 18,526 | 19,209 | 18,402 | 20,752 | 21,489 |
| | $ 000 | 186,339 | 2,062,154 | 2,740,339 | 1,743,605 | 1,808,971 | 1,559,096 |
| Petroleum Crude | 000 $M^3$ | 59,035 | 64,274 | 69,922 | 69,322 | 72,460 | 76,276 |
| | $ 000 | 1,055,769 | 8,303,712 | 15,207,350 | 7,978,155 | 10,050,323 | 7,724,165 |
| **Structural Materials** | | | | | | | |
| Clay Products | $ 000 | 4,031 | 15,308 | 7,828 | 10,158 | 14,183 | 9,382 |
| Cement | 000 Tonnes | 770 | 1 445 | 1,143 | 949 | 1,107 | 1,153 |
| | $ 000 | 18,736 | 94,848 | 148,882 | 113,371 | 116,947 | 126,545 |
| Lime | 000 Tonnes | 91 | 183 | 141 | 193 | 213 | 186 |
| | $ 000 | 2,034 | 11,047 | 14,990 | 16,196 | 19,194 | 17,642 |
| Sand & Gravel | 000 Tonnes | 16,946 | 26,465 | 49,287 | 45,128 | 44,050 | 42,500 |
| | $ 000 | 16,285 | 97,323 | 121,668 | 133,092 | 137,523 | 133,875 |
| Stone | 000 Tonnes | 167 | 271 | 225 | 229 | 249 | 300 |
| | $ 000 | 709 | 2,017 | 3,116 | 1,315 | 1,532 | 2,100 |
| **Non-Metallics** | | | | | | | |
| Peat Moss | 000 Tonnes | 10 | 45 | 56 | 72 | 78 | 86 |
| | $ 000 | 319 | 6 512 | 12,454 | 13,930 | 15,221 | 15,554 |
| Quartz | $ 000 | 72 | 3,173 | 4,432 | 3,355 | 4,069 | 5,300 |
| Sodium Sulphate | $ 000 | 1 242 | 3,030 | 3,634 | 3,974 | 3,031 | 3,128 |
| Sulphur Elemental | 000 Tonnes | 2,733 | 7,709 | 7,833 | 6,657 | 5,471 | 5,573 |
| | $ 000 | 19,589 | 626 140 | 992,926 | 803,995 | 479,370 | 420,582 |
| Salt | 000 Tonnes | 222 | 855 | 1,404 | 1,304 | 1,191 | 1,218 |
| | $ 000 | 2 292 | 13,638 | 17,995 | 14,216 | 17,385 | 17,504 |
| **Metals** | | | | | | | |
| Gold | Grams | 2,457 | 48 | 28 | 36 | 43 | 20 |
| | $ 000 | 3 | 847 | 396 | 594 | 824 | 353 |
| Silver | Grams | | – | | – | – | – |
| | $ 000 | | 2 | - | - | 1 | 1 |
| **TOTAL VALUE** | | **1,640,508** | **17,559,491** | **27,029,638** | **16,330,582** | **17,079,970** | **14,906,395** |

[illegible]

## Volume of Mineral Production, Alberta and Canada, Specified Years 1971, 1981, 1985-1988

| | | 1971 | | 1981 | | 1985 | | 1986 | | 1987 | | 1988 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Units | Alberta | Canada | Alberta | Canada | Alberta | Canada | Alberta | Canada | Alberta | Canada | Alberta | Canada |
| **Fuels** | | | | | | | | | | | | | |
| Coal | '000 Tonnes | 7,269 | 16,721 | 18,446 | 40,088 | 24,350 | 60,436 | 24,950 | 57,811 | 25,738 | 61,211 | 29,270 | 69,500 |
| Natural Gas | '000,000 M$^3$ | 58,243 | 70,407 | 64,306 | 73,824 | 70,869 | 84,344 | 62,556 | 71,896 | 67,029 | 78,267 | 76,308 | 87,893 |
| Natural Gas By-products | '000 M$^3$ | 13,056 | 13,607 | 18,526 | 18,883 | 19,240 | 19,682 | 18,402 | 19,127 | 20,752 | 21,560 | 21,489 | 22,332 |
| Petroleum, Crude | '000 M$^3$ | 59,035 | 78,300 | 64,274 | 74,553 | 69,213 | 85,564 | 69,322 | 85,468 | 72,460 | 89,140 | 76,276 | 92,856 |
| **Non-Metallics** | | | | | | | | | | | | | |
| Peat Moss | '000 Tonnes | 10 | 343 | 45 | 462 | 50 | 643 | 72 | 738 | 78 | 648 | 86 | 708 |
| Salt | '000 Tonnes | 22 | 5,028 | 855 | 7,240 | 1,403 | 10,043 | 1,304 | 10,332 | 1,191 | 10,129 | 1,218 | 10,975 |
| Sulphur, Elemental | '000 Tonnes | 2,733 | 2,857 | 7,709 | 8,018 | 7,995 | 8,102 | 6,657 | 6,966 | 5,471 | 5,809 | 5,573 | 5,915 |
| **Structural Materials** | | | | | | | | | | | | | |
| Cement | '000 Tonnes | 770 | 8,234 | 1,445 | 10,145 | 1,007 | 10,192 | 949 | 10,611 | 1,107 | 12,603 | 1,153 | 12,611 |
| Lime | '000 Tonnes | 91 | 1,491 | 183 | 2,555 | 147 | 2,212 | 193 | 2,243 | 213 | 2,330 | 186 | 2,535 |
| Sand & Gravel | '000 Tonnes | 16,946 | 193,494 | 26,465 | 260,134 | 44,600 | 256,183 | 45,128 | 257,971 | 44,050 | 278,546 | 42,500 | 276,064 |
| Stone | '000 Tonnes | 167 | 66,692 | 271 | 85,091 | 180 | 86,632 | 229 | 97,602 | 249 | 113,291 | 300 | 112,422 |
| **Metals** | | | | | | | | | | | | | |
| Gold | '000 g | 2 | 64,091 | 48 | 52,034 | 8 | 87,562 | 36 | 102,899 | 43 | 115,818 | 20 | 127,843 |
| Silver | '000 kg | – | 1,305 | – | 1,129 | – | 1,197 | – | 1,088 | – | 1,375 | – | 1,527 |

Source: Statistics Canada, Catalogue Nos. 26-201 and 26-[illegible]

## Remaining Established Reserves of Fossil Fuels, Alberta (Estimated at Year End 1988)

| Fuel | Type | Unit of Measure | Quantity |
|---|---|---|---|
| Coal | Subbituminous | Tonne | 27,200 x 10$^6$ |
| | Bituminous | | |
| | – Metallurgical | Tonne | 1,500 x 10$^6$ |
| | – Thermal Grade | Tonne | 3,400 x 10$^6$ |
| Synthetic Crude Oil (Developed and Undeveloped) | | M$^3$ | 4,052.7 x 10$^6$ |
| Conventional Crude Oil | | M$^3$ | 606.5 x 10$^6$ |
| Ethane | | M$^3$ | 313 x 10$^6$ |
| Natural Gas | | M$^3$ | 1,628 x 10$^9$ |
| Liquified Petroleum Gases * | | M$^3$ | 198 x 10$^6$ |
| Pentanes Plus | | M$^3$ | 125.1 x 10$^6$ |

* Includes Propane and Butane

Source: Alberta Energy Resources Conservation Board, Reports ST 89-18 and ST 89-31

## Estimated Remaining Ultimate Potential Reserves of Fossil Fuels, Alberta (Estimated at Year End 1988)

| Fuel | Type | Unit of Measure | Quantity |
|---|---|---|---|
| Coal | Subbituminous | Tonne | 560,000 x $10^9$ |
| | Bituminous | | |
| | – Low-Medium Volatile | Tonne | 4,400 x $10^9$ |
| | – High Volatile | Tonne | 190,000 x $10^9$ |
| Synthetic Crude Oil and Bitumen | | $M^3$ | 48,824 x $10^6$ |
| Conventional Crude Oil* | | $M^3$ | 1,266 x $10^6$ |
| Ethane | | $M^3$ | 615 x $10^6$ |
| Natural Gas | | $M^3$ | 3,295 x $10^9$ |
| Liquified Petroleum Gasses ** | | $M^3$ | 377 x $10^6$ |
| Pentanes Plus | | $M^3$ | 259 x $10^6$ |

* Includes Tertiary Recovery

** Includes Propane and Butane

Source: Alberta Energy Resources Conservation Board, Reports ST [illegible]

## Conventional Drilling Activity, Alberta, 1978-1988

| | No. of Wells Drilled | | | kilometers Drilled | | | Well Completions | | Rig Activity (1) | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | Development | Exploration | Total * | Development | Exploration | Total * | Oil | Gas | Drilling | Available |
| 1978 | 3,186 | 2,387 | 5,573 | 3,349 | 2,777 | 6,126 | 944 | 1,527 | – | – |
| 1983 | 2,990 | 1,370 | 4,360 | 3,831 | 1,814 | 5,645 | 2,242 | 872 | 152 | 397 |
| 1984 | 3,274 | 1,928 | 6,167 | 4,563 | 2,394 | 7,455 | 2,204 | 1,362 | 189 | 385 |
| 1985 | 4,404 | 2,244 | 8,476 | 5,641 | 2,868 | 9,334 | 2,632 | 721 | 241 | 413 |
| 1986 | 2,463 | 1,561 | 4,509 | 3,647 | 2,000 | 5,847 | 1,985 | 2,232 | 159 | 457 |
| 1987 | 2,690 | 1,865 | 5,182 | 3,961 | 2,469 | 6,736 | 1,829 | 462 | 168 | 461 |
| 1988 (p) | 3,362 | 2,260 | 6,617 | 4,604 | 2,806 | 7,887 | – | – | 189 | 455 |

* Includes Other

** Detailed Information also Available In Asist Matrix Number 6235 **

Note Some Figures May Not Add Due To Revisions And To The Rounding Process

(p) Preliminary Estimates

(1) Canadian Association of Oilwell Drilling Contractors

Source: Alberta Energy Resources Conservation Board, Reports [illegible]

## Annual Production of Liquid Hydrocarbons and Natural Gas, By Types, Alberta, 1971-1988 (Thousands of Cubic Metres)

| | Crude Oil Light, Medium and Heavy | Synthetic | Bitumen | Condensates | Pentanes Plus | Propane | Butanes | Ethane | Total Liquid Hydrocarbons |
|---|---|---|---|---|---|---|---|---|---|
| 1971 | 56 737 | 2,451 | 15 | 122 | 7,072 | 3,694 | 2,401 | N/A | N/A |
| 1976 | 60 908 | 2,779 | 440 | 115 | 7,421 | 5,501 | 3,735 | 184 | 81,083 |
| 1981 | 56,978 | 6,446 | 753 | 95 | 5,652 | 5,193 | 3,126 | 4,456 | 82,699 |
| 1988 | 54,519 | 11 643 | 7,546 | 150 | 6,301 | 5,896 | 3,357 | 6,513 | 95,925 |

Source: Alberta Energy Resources Conservation Board, Reports [illegible]

# Canadian Crude Oil Production* By Province and Territory, Selected Years 1947-1988 (Thousands of Cubic Metres)

| | N.W.T. | British Columbia | **Alberta | Saskat-chewan | Manitoba | Western Canada | Eastern Canada | Canada |
|---|---|---|---|---|---|---|---|---|
| 1947-1956 | 484 | 24 | 92,675 | 7,430 | 2,044 | 102,657 | 511 | 104,181 |
| 1957-66 | 862 | 1,062 | 248,292 | 100,929 | 8,336 | 359,481 | 1,726 | 370,119 |
| 1967 | 113 | 3,125 | 36,694 | 14,712 | 7,713 | 62,357 | 199 | 55,731 |
| 1968 | 120 | 3,522 | 39,991 | 14,609 | 888 | 59,130 | 184 | 59,412 |
| 1969 | 127 | 4,024 | 44,402 | 13,896 | 986 | 63,435 | 186 | 63,622 |
| 1970 | 135 | 4,028 | 51,769 | 14,227 | 940 | 71,099 | 168 | 71,265 |
| 1971 | 149 | 3,997 | 56,780 | 14,063 | 891 | 75,880 | 154 | 76,034 |
| 1972 | 141 | 3,787 | 67,508 | 13,768 | 835 | 86,040 | 141 | 86,181 |
| 1973 | 153 | 3,367 | 83,013 | 13,626 | 808 | 100,966 | 130 | 101,097 |
| 1974 | 159 | 2,995 | 79,108 | 11,726 | 755 | 94,742 | 118 | 94,860 |
| 1975 | 160 | 2,269 | 67,512 | 9,379 | 702 | 80,021 | 113 | 80,134 |
| 1976 | 142 | 2,366 | 60,908 | 8,886 | 633 | 72,936 | 101 | 73,037 |
| 1977 | 138 | 2,199 | 60,514 | 9,763 | 631 | 73,245 | 99 | 73,344 |
| 1978 | 146 | 2,004 | 60,015 | 9,625 | 598 | 72,388 | 96 | 72,483 |
| 1979 | 150 | 2,140 | 68,516 | 9,372 | 583 | 80,761 | 93 | 80,853 |
| 1980 | 161 | 2,002 | 63,201 | 9,331 | 564 | 75,258 | 94 | 75,352 |
| 1981 | 173 | 2,032 | 56,979 | 7,393 | 543 | 67,120 | 90 | 67,210 |
| 1982 | 173 | 2,077 | 54,384 | 8,104 | 582 | 65,320 | 86 | 65,406 |
| 1983 | 169 | 2,079 | 55,317 | 9,543 | 737 | 67,846 | 84 | 67,929 |
| 1984 | 175 | 2,094 | 59,886 | 10,812 | 793 | 73,761 | 91 | 73,851 |
| 1985 | 1,148 | 1,941 | 59,995 | 11,578 | 821 | 75,483 | 112 | 75,595 |
| 1986 | 1,528 | 2,020 | 53,082 | 11,691 | 823 | 69,143 | 112 | 72,601 |
| 1987 | 1,567 | 2,084 | 55,170 | 12,037 | 782 | 71,640 | 136 | 69,278 |
| 1988 | 1,803 | 1,882 | 57,653 | 12,249 | 769 | 74,356 | 191 | 74,547 |

* Excludes Experimental and Synthetic Crude Oil

** Includes Some Condensate Prior to 1951

Source Canadian Petroleum Association, Statistical Handbook, 1989; Statistics Canada: The Crude Petroleum and Natural Gas Industry, Cat. No 26-2B

## Canadian Natural Gas Production* By Province and Territory, Selected Years 1947-1988 (Millions of Cubic Metres)

| | **N.W.T.** | **British Columbia** | **Alberta** | **Saskat-chewan** | **Western Canada** | **Eastern Canada** | **Canada** |
|---|---|---|---|---|---|---|---|
| 1947-1956 | 38 | 14 | 28,089 | 1,168 | 29,309 | 2,679 | 31,987 |
| 1957-1966 | 145 | 31,249 | 181,345 | 15,628 | 228,367 | 4,346 | 232,713 |
| 1967 | 18 | 6,732 | 35,368 | 1,750 | 43,868 | 404 | 44,272 |
| 1968 | 20 | 7,681 | 40,437 | 1,928 | 50,066 | 346 | 50,412 |
| 1969 | 19 | 8 908 | 47,275 | 1,974 | 58,177 | 322 | 58,499 |
| 1970 | 25 | 9,561 | 54,441 | 2,271 | 66,299 | 475 | 66,774 |
| 1971 | 60 | 9 960 | 59,592 | 2,461 | 72,073 | 466 | 72,539 |
| 1972 | 451 | 12,413 | 67,967 | 2,204 | 83,036 | 358 | 83,395 |
| 1973 | 1,094 | 13,460 | 73,591 | 2,161 | 90,305 | 278 | 90,583 |
| 1974 | 966 | 11,625 | 73,354 | 2,019 | 87,964 | 221 | 88,185 |
| 1975 | 934 | 11,277 | 74,468 | 1,960 | 88,640 | 314 | 88,954 |
| 1976 | 1,026 | 10,829 | 75,237 | 1,902 | 88,995 | 143 | 89,139 |
| 1977 | 856 | 11,061 | 78,545 | 1,669 | 92,131 | 244 | 92,375 |
| 1978 | 619 | 9 898 | 77,494 | 1,554 | 89,655 | 355 | 90,011 |
| 1979 | 626 | 11,384 | 82,314 | 1,559 | 95,883 | 390 | 96,274 |
| 1980 | 402 | 9 056 | 77,358 | 1,591 | 88,407 | 448 | 88,858 |
| 1981 | 397 | 8,418 | 76,376 | 1,498 | 86 690 | 426 | 87,116 |
| 1982 | 261 | 7,879 | 78,522 | 1,620 | 88,282 | 442 | 88,724 |
| 1983 | 227 | 7,853 | 75,006 | 1,669 | 84,754 | 468 | 85,222 |
| 1984 | 235 | 8,276 | 81,112 | 2,126 | 91,749 | 487 | 92,236 |
| 1985 | 229 | 7,518 | 86,716 | 1,798 | 96,261 | 522 | 96,783 |
| 1986 | 393 | 8 490 | 82,272 | 2,746 | 93,901 | 504 | 94,406 |
| 1987 | 377 | 9 826 | 88 364 | 2,939 | 101,506 | 508 | 102,017 |
| 1988 | 293 | 10 312 | 100 806 | 4,533 | 115,944 | 505 | 116,449 |

* Raw Natural Gas Production Less Raw and Processed Injected Gas

[illegible]

## Net Cash Expenditures of the Petroleum Industry,1978-1988 Alberta (Millions of Dollars)

| | **1978** | **1979** | **1980** | **1981** | **1982** | **1983** | **1984** | **1985** | **1986** | **1987** | **1988** | **Cum. 47-88** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exploration ** | 1,735 3 | 2,521 9 | 3 250 4 | 2,617.2 | 1,867 0 | 1,955 2 | 2,392 8 | 2,869.9 | 1,917.5 | 2,271.9 | 2,286.8 | 34,185.5 |
| Development ** | 1,129 2 | 1 538 3 | 2,340 7 | 2,418 3 | 2,408 2 | 1,801.4 | 2,136 0 | 2,879.9 | 2,246.5 | 2,037.1 | 2,729.1 | 30.923.0 |
| Operating | 1,103 4 | 1,373 4 | 1,679 2 | 1,834 5 | 2,185 3 | 2,431.8 | 3,137.1 | 3,645.9 | 3,674.5 | 3,494.3 | 3,919.3 | 34,386.3 |
| Royalties * | 3,054 9 | 3,623 3 | 4,248 0 | 4,496 7 | 5,098 1 | 5,467 2 | 5,958.1 | 6,005.4 | 3,373.7 | 2,648.5 | 2,475.9 | 55,512.4 |
| **TOTAL EXPENDITURES** | **7,022.8** | **9,056.9** | **11,518.3** | **11,366.7** | **11,558.6** | **11,655.6** | **13,624.0** | **15,401.1** | **11,212.2** | **10,451.8** | **11,411.1** | **155,007.2** |

* Net of Incentive Grants where applicable

** Before P I P Grants

[illegible]

## Disposition of Alberta Coal, 1971-1988 (Thousands of Metric Tonnes)

| | Sub-Bituminous Sales to | | | Bituminous Sales to | | | | |
|---|---|---|---|---|---|---|---|---|
| | Alberta | Other Provinces | Total | Alberta | Other Provinces | U.S. | Offshore | Total |
| 1971 | 3,881 | 126 | 4,007 | 1 | 75 | 5 | 3,114 | 3,196 |
| 1976 | 5,723 | 599 | 6,322 | 120 | 177 | 0 | 4,472 | 4,768 |
| 1981 | 11,144 | 77 | 11,221 | 591 | 1,880 | 0 | 4,304 | 6,775 |
| 1984 | 15,502 | 2 | 15,504 | 684 | 1,880 | 0 | 4,499 | 7,063 |
| 1985 | 17,073 | 1 | 17,074 | 934 | 1,445 | 17 | 5,226 | 7,623 |
| 1986 | 17,328 | 2 | 17,330 | 513 | 1,405 | 53 | 5,653 | 7,624 |
| 1987 | 18,535 | 2 | 18,536 | 381 | 1,747 | 38 | 5,032 | 7,198 |
| 1988 | 19,910 | 1 | 19,911 | 352 | 1,867 | 0 | 7,290 | 9,508 |

Source: Alberta Energy Resources Conservation Board, Report ST 89-29

## Remaining Established Reserves and Production of Coal by Year, Alberta, 1984-1988, (Billions of Tonnes)

| Year | Year-End Remaining Established Reserves | | | Marketable Production | | |
|---|---|---|---|---|---|---|
| | Subbituminous Coal $10^9$ Tonnes | Metallurgical-Grade Bituminous Coal $10^9$ Tonnes | Thermal-Grade Bituminous Coal $10^9$ Tonnes | Subbituminous Coal $10^6$ Tonnes | Metallurgical-Grade Bituminous Coal $10^6$ Tonnes | Thermal-Grade Bituminous Coal $10^6$ Tonnes |
| Actual | | | | | | |
| 1984 | 17.2 | 1.6 | 2.4 | 15.5 | 4.3 | 3.2 |
| 1985 | 17.8 | 1.6 | 2.4 | 17.1 | 4.4 | 3.2 |
| 1986 | 21.0 | 1.5 | 3.3 | 17.3 | 4.7 | 2.9 |
| 1987 | 25.3 | 1.6 | 3.6 | 18.5 | 4.2 | 3.0 |
| 1988 | 27.2 | 1.5 | 3.4 | 19.9 | 6.0 | 3.6 |

Source: Alberta Energy Resources [illegible]

## Disposition of Electrical Energy, Alberta, 1977-1988 (Gigawatt Hours)

| | | Interprovincial Interchange | | | Deliveries To: | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Year | (1) Net Generation | Received From Out of Province | Delivered Out of Province | Total Available Energy | Total | Farm | Residental | Commercial | Industrial |
| 1977 | 17,003 | 144 | -396 | 16,751 | 14,752 | 871 | 3,074 | 3,451 | 7,356 |
| 1982 | 24,718 | 450 | -189 | 24,979 | 22,509 | 1,268 | 4,758 | 5,280 | 11,203 |
| 1983 | 26,358 | 346 | -193 | 26,510 | 23,742 | 1,262 | 4,724 | 8,685 | 9,070 |
| 1984 | 28,425 | 303 | -260 | 28,469 | 25,795 | 1,326 | 5,148 | 8,524 | 10,798 |
| 1985 | 30,517 | 288 | -250 | 30,555 | 27,524 | 1,392 | 5,338 | 8,829 | 11,965 |
| 1986 | 31,691 | 528 | -629 | 31,590 | 28,614 | 1,403 | 5,346 | 9,326 | 12,540 |
| 1987 | 33,660 | 380 | -858 | 33,181 | 29,940 | 1,407 | 5,299 | 9,593 | 13,642 |
| 1988 | 36,942 | 372 | -1238 | 36,076 | 32,662 | 1,530 | 5,546 | 10,132 | 15,454 |

(1) Excludes Industrial On-Site Generation Prior To 1988

Note:Some figures may not add due to revisions and to the rounding process

** Detailed information also available in Asist Matrix Number 6226 **

(p) Preliminary Estimates

Source: Alberta Energy Resources Conservation Board, Report ST 89-28

## Alberta Electric Energy Markets, 1977-1988 (Gigawatt Hours)

| Year | Resident & Farms | Commercial | Industrial | Transport | Industrial On-Site Generation | TOTAL |
|---|---|---|---|---|---|---|
| 1977 | 3,945 | 3,451 | 6,861 | 495 | 377 | **15,129** |
| 1978 | 4,442 | 3,789 | 7,401 | 490 | 1,132 | **17,254** |
| 1979 | 4,894 | 4,147 | 8,244 | 610 | 1,237 | **19,132** |
| 1980 | 5,108 | 4,603 | 8,919 | 579 | 1,610 | **20,819** |
| 1981 | 5,399 | 5,108 | 9,729 | 511 | 1,605 | **22,352** |
| 1982 | 6,026 | 5,280 | 10,695 | 508 | 1,678 | **24,187** |
| 1983 | 5,987 | 8,685 | 8,478 | 592 | 1,704 | **25,446** |
| 1984 | 6,457 | 8,542 | 10,177 | 633 | 2,690 | **28,499** |
| 1985 | 6,643 | 8,887 | 11,140 | 735 | 2,924 | **30,329** |
| 1986 | 6,748 | 9,326 | 11,752 | 788 | 3,136 | **31,750** |
| 1987 | 6,706 | 9,593 | 12,802 | 840 | 3,266 | **33,207** |
| 1988 | 7,153 | 10,231 | 14,403 | 1,000 | 3,441 | **36,228** |

1988 is Estimate
Industrial-Actual Industrial Minus Estimated Transportation

Industrial On-Site Generation - Industrial On-Site Generation Preliminary Actual

Source: Alberta Energy Resources Conservation Board, Report ST 89-28

## Alberta Interconnected Electric System (AIS) Generating Capacity and Energy Generation by Year, 1984-1988

| Year | Hydro | Generating Capacity (MW)[1] |  |  | Total | Generation[2] |  |
|---|---|---|---|---|---|---|---|
|  |  | Thermal |  |  |  | Peak MW | GW.h |
|  |  | Gas | Coal | Total |  |  |  |
| 1984 | 800 | 1,247 | 4,165 | 5,412 | 6,212 | 4,571 | 28,373 |
| 1985 | 800 | 1,247 | 4,165 | 5,412 | 6,212 | 4,923 | 30,464 |
| 1986 | 800 | 1,247 | 4,534 | 5,781 | 6,581 | 4,862 | 31,634 |
| 1987 | 800 | 1,247 | 4,534 | 5,781 | 6,581 | 5,049 | 33,603 |
| 1988 | 800 | 1,247 | 4,534 | 5,781 | 6,581 | 5,352 | 36,770 |

1 Based on the Utilities' Latest Assessment of the Maximum Continuous Rating (MCR) of the Individual Units

2 Actual Peak Generation May Not Equal the Actual Peak Load on the AIS Since Part of the Latter Might Have Been Supplied by Ex-Alberta Sources

Source: Alberta Energy Resources Conservation Board

## Value of Construction Work Performed, by Detailed Type of Construction, Alberta, 1971-1989 (Millions of Dollars)

| | 1971 | 1976 | 1981 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989* |
|---|---|---|---|---|---|---|---|---|---|
| Total Building Construction | 865 | 2,573 | 6,378 | 3,300 | 3,888 | 4,109 | 4,575 | 4,891 | 4,961 |
| Residential | 492 | 1,700 | 2,830 | 1,160 | 1,616 | 1,760 | 1,960 | 2,294 | 2,486 |
| Non-residential | 373 | 873 | 3,548 | 2,140 | 2,272 | 2,349 | 2,615 | 2,597 | 2,475 |
| Industrial | 51 | 81 | 419 | 193 | 189 | 212 | 199 | 264 | 272 |
| Factories, Plants, Workshops | 45 | 72 | 395 | 138 | 127 | 159 | 146 | 216 | 223 |
| Other | 6 | 9 | 24 | 55 | 62 | 53 | 53 | 48 | 49 |
| Commercial | 123 | 463 | 2,130 | 1,001 | 1,192 | 1,233 | 1,550 | 1,469 | 1,270 |
| Warehouses,Storehouses Etc. | 10 | 89 | 187 | 79 | 70 | 74 | 58 | 75 | 74 |
| Office Buildings | 41 | 188 | 1,199 | 496 | 414 | 480 | 653 | 672 | 618 |
| Retail and Wholesale | 44 | 95 | 464 | 172 | 414 | 303 | 489 | 365 | 259 |
| Other | 28 | 91 | 280 | 254 | 294 | 376 | 350 | 357 | 319 |
| Institutional | 137 | 131 | 605 | 568 | 516 | 604 | 535 | 518 | 554 |
| Schools and Other Educational Buildings | 107 | 56 | 251 | 177 | 200 | 239 | 250 | 232 | 273 |
| Hospitals,Sanatoria,Clinics | 17 | 50 | 238 | 284 | 245 | 221 | 164 | 197 | 172 |
| Other | 13 | 25 | 116 | 107 | 71 | 144 | 121 | 89 | 109 |
| Other Building | 62 | 198 | 395 | 378 | 376 | 300 | 331 | 347 | 378 |
| Farm Buildings (Excl. Dwellings) | 43 | 86 | 215 | 225 | 162 | 118 | 149 | 209 | 218 |
| Other | 19 | 112 | 180 | 153 | 214 | 182 | 182 | 138 | 160 |
| Total Engineering Construction | 981 | 2,625 | 8,112 | 6,231 | 7,387 | 6,240 | 5,915 | 7,045 | 7,042 |
| Marine Construction | 1 | 9 | 3 | 8 | 13 | 58 | – | – | – |
| Road, Highway, Bridge | 143 | 314 | 859 | 712 | 920 | 847 | 885 | 939 | 994 |
| Waterworks and Sewage System | 46 | 141 | 434 | 366 | 348 | 357 | 291 | 289 | 285 |
| Water Mains, Hydrants and Services | 17 | 44 | 137 | 94 | 89 | 87 | 90 | 102 | 113 |
| Sewage Systems and Connections | 12 | 27 | 108 | 135 | 86 | 109 | 61 | 38 | 40 |
| Other | 17 | 70 | 189 | 137 | 173 | 161 | 140 | 149 | 132 |
| Dams and Irrigation | 12 | 14 | 158 | 124 | 154 | 86 | 152 | 153 | 196 |
| Electric Power Construction | 82 | 254 | 454 | 343 | 295 | 365 | 305 | 286 | 331 |
| Power Gen. Plants, Incl. Water | 45 | 172 | 226 | 119 | 96 | 87 | 55 | 80 | 33 |
| Transmission, Distr. & Trolley Lines | 36 | 80 | 219 | 215 | 199 | 278 | 250 | 205 | 297 |
| Other | 1 | 2 | 9 | 9 | 0 | 0 | 0 | 1 | 1 |
| Railway, Telephone & Telegraph | 61 | 152 | 363 | 321 | 271 | 339 | 317 | 340 | 420 |
| Railway Tracks and Roadbed | 25 | 73 | – | – | – | – | 151 | 150 | 227 |
| Other | 36 | 79 | 363 | 321 | 271 | 339 | 166 | 190 | 193 |
| Gas and Oil Facilities | 563 | 1,262 | 5,291 | 4,001 | 4,895 | 3,701 | 3,627 | 4,720 | 4,492 |
| Gas Mains and Services | 10 | 27 | – | 53 | 79 | 62 | 80 | 67 | 72 |
| Oil & Gas Pipelines | 49 | 20 | – | 264 | 250 | – | – | – | – |
| Oil and Gas Wells | 278 | 987 | 3,862 | 3,176 | 4,063 | 3,103 | 3,035 | 3,938 | 3,413 |
| Natural Gas Processing Plants | 198 | 201 | 360 | 338 | 396 | 291 | 248 | 243 | 412 |
| Other | 28 | 27 | 1,069 | 170 | 107 | 245 | 264 | 472 | 595 |
| Other Engineering | 73 | 480 | 551 | 357 | 491 | 487 | 299 | 306 | 310 |
| Bridges, Trestles, Culverts, Overpass | 22 | 28 | 81 | 60 | 63 | 97 | 90 | 103 | 115 |
| Other | 51 | 452 | 470 | 297 | 428 | 390 | 209 | 203 | 195 |
| Total Value of Construction | 1,846 | 5,197 | 14,490 | 9,531 | 11,276 | 10,349 | 10,490 | 11,937 | 12,003 |
| Salaries and Wages $ | 627 | 1,774 | 4,356 | 2,810 | 3,155 | 2,847 | 2,988 | 3,316 | 3,388 |
| Cost of Materials Used | 771 | 1,869 | 5,882 | 4,006 | 4,543 | 4,153 | 4,147 | 4,890 | 4,868 |
| Number of Employees ('000) | 62 | 126 | 152 | 98 | 109 | 103 | 110 | 113 | 110 |

* Forecast

Source: Statistics Canada, Construction in Canada, Cat. No. 64-201

## Dwelling Starts, Completions and Under Construction at Year End, Alberta, Centres of Over 10,000 Population, 1971-1988 (Units)

| | 1971 | 1976 | 1981 | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|---|---|---|
| Alberta (All Areas) | | | | | | | | |
| Starts | 25,602 | 38,771 | 38,470 | 7,295 | 8,337 | 8,462 | 10,790 | 4,654 |
| Completions | 20,829 | 25,858 | 34,755 | 12,057 | 7,517 | 9,172 | 9,334 | 4,989 |
| Under Construction | 15,320 | 29,411 | 22,960 | 2,943 | 3,518 | 2,913 | 4,331 | 0 |
| Edmonton Metro | | | | | | | | |
| Starts | 11,256 | 12,370 | 11,999 | 2,384 | 2,528 | 2,561 | 3,608 | 4,133 |
| Completions | 8,252 | 8,495 | 11,270 | 4,481 | 2,380 | 2,709 | 3,171 | 3,718 |
| Under Construction | 8,096 | 11,060 | 6,979 | 805 | 771 | 692 | 1,172 | 1,541 |
| Edmonton | | | | | | | | |
| Starts | 9,451 | 10,259 | 10,517 | 1,877 | 1,970 | 1,910 | 2,366 | 2,702 |
| Completions | 6,634 | 6,663 | 9,641 | 3,739 | 1,889 | 2,076 | 2,110 | 2,341 |
| Under Construction | 7,268 | 9,530 | 6,278 | 584 | 600 | 506 | 758 | 1,076 |
| Calgary Metro | | | | | | | | |
| Starts | 8,801 | 11,360 | 15,172 | 1,803 | 2,318 | 2,679 | 3,466 | 3,800 |
| Completions | 7,738 | 6,817 | 12,712 | 3,316 | 2,009 | 2,848 | 2,539 | 4,123 |
| Under Construction | 4,768 | 8,762 | 10,373 | 698 | 1,189 | 1,050 | 2,019 | 1,681 |
| Camrose | | | | | | | | |
| Starts | N/A | N/A | 167 | 101 | 31 | 31 | 41 | 28 |
| Completions | N/A | N/A | 282 | 31 | 36 | 87 | 46 | 25 |
| Under Construction | N/A | N/A | 40 | 75 | 70 | 14 | 9 | 12 |
| Fort McMurray | | | | | | | | |
| Starts | N/A | N/A | 1,222 | 164 | 265 | 34 | 75 | 155 |
| Completions | N/A | N/A | 807 | 243 | 210 | 104 | 54 | 114 |
| Under Construction | N/A | N/A | 677 | 20 | 74 | 4 | 24 | 66 |
| Grande Prairie | | | | | | | | |
| Starts | 307 | 333 | 314 | 82 | 166 | 171 | 156 | 143 |
| Completions | 242 | 274 | 955 | 93 | 143 | 175 | 156 | 135 |
| Under Construction | 184 | 221 | 93 | 20 | 43 | 38 | 38 | 46 |
| Lethbridge | | | | | | | | |
| Starts | 700 | 1,420 | 1,330 | 178 | 142 | 203 | 236 | 252 |
| Completions | 864 | 1,054 | 880 | 324 | 138 | 195 | 205 | 214 |
| Under Construction | 201 | 989 | 726 | 62 | 65 | 71 | 101 | 134 |
| Lloydminster (Alberta Portion) | | | | | | | | |
| Starts | N/A | N/A | 264 | 138 | 230 | 78 | 47 | 61 |
| Completions | N/A | N/A | 277 | 103 | 231 | 131 | 53 | 41 |
| Under Construction | N/A | N/A | 95 | 72 | 70 | 18 | 12 | 31 |
| Medicine Hat | | | | | | | | |
| Starts | 153 | 1,467 | 856 | 108 | 99 | 187 | 260 | 168 |
| Completions | 91 | 1,202 | 872 | 130 | 98 | 158 | 226 | 232 |
| Under Construction | 95 | 922 | 315 | 58 | 59 | 88 | 122 | 57 |
| Red Deer | | | | | | | | |
| Starts | 459 | 1,163 | 1,848 | 164 | 199 | 369 | 490 | 426 |
| Completions | 320 | 972 | 1,405 | 497 | 170 | 350 | 448 | 355 |
| Under Construction | 214 | 633 | 1,249 | 20 | 47 | 66 | 108 | 179 |

[illegible]

# Value of Building Permits, by Type, Selected Cities, Census Divisions and Selected Municipalities, Alberta, 1976-1988 (Thousands of Dollars)

| | 1976 | 1981 | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|---|---|
| Census Div. 1 | 56,933 | 71,782 | 40,432 | 70,111 | 37,157 | 69,986 | 45,246 |
| Medicine Hat | 46,700 | 57,475 | 29,830 | 65,383 | 26,602 | 29,538 | 42,970 |
| Redcliff | 5,705 | 3,683 | 722 | 1,047 | 1,142 | 1,240 | 1,399 |
| Census Div. 2 | 98,883 | 123,297 | 75,226 | 125,570 | 60,878 | 83,865 | 82,805 |
| Lethbridge | 60,244 | 89,516 | 42,990 | 103,377 | 42,632 | 59,793 | 59,623 |
| Brooks | 13,689 | 5,044 | 1,727 | 8,498 | 4,698 | 3,438 | 4,363 |
| Coaldale | 6,761 | 2,837 | 2,261 | 1,500 | 2,182 | 4,724 | 9,723 |
| Taber | 5,452 | 7,584 | 16,203 | 4,756 | 3,764 | 4,724 | 4,390 |
| Census Div. 3 | 18,831 | 16,820 | 9,748 | 9,620 | 11,006 | 15,497 | 9,481 |
| Cardston | 4,064 | 1,071 | 3,362 | 4,694 | 1,714 | 2,028 | 4,783 |
| Claresholm | 4,908 | 3,893 | 1,603 | 2,028 | 3,556 | 10,288 | 1,044 |
| Fort Macleod | 2,303 | 1,748 | 2,243 | 888 | 1,881 | 1,091 | 1,694 |
| Census Div. 4 | 3,897 | 7,609 | 1,438 | 2,805 | 1,492 | 782 | 1,379 |
| Census Div. 5 | 16,061 | 28,316 | 11,001 | 13,859 | 10,994 | 11,095 | 7,720 |
| Drumheller | 5,574 | 6,211 | 3,010 | 2,159 | 2,668 | 2,273 | 1,322 |
| Census Div. 6 | 504,209 | 2,602,121 | 449,807 | 538,181 | 635,857 | 712,073 | 699,908 |
| Calgary | 447,817 | 2,445,479 | 398,415 | 474,279 | 569,613 | 647,568 | 660,395 |
| Airdrie | 3,635 | 43,215 | 14,511 | 4,571 | 4,859 | 2,570 | 4,929 |
| Cochrane | 4,600 | 7,083 | 1,067 | 2,977 | 7,652 | 3,146 | 4,127 |
| Didsbury | 2,825 | 5,410 | 1,194 | 1,372 | 1,475 | 2,348 | 1,653 |
| High River | 4,394 | 9,467 | 3,270 | 1,915 | 3,112 | 2,705 | 1,690 |
| Okotoks | 6,093 | 18,245 | 46 | 141 | 0 | 1,625 | 7,377 |
| Olds | 7,818 | 4,751 | 2,357 | 13,784 | 2,312 | 3,083 | 3,434 |
| Census Div. 7 | 17,201 | 18,032 | 11,612 | 27,297 | 15,777 | 19,812 | 11,226 |
| Stettler | 6,223 | 5,132 | 1,587 | 13,346 | 3,361 | 10,652 | 2,079 |
| Wainwright | 2,521 | 5,527 | 137 | 2,569 | 3,596 | 3,830 | 5,686 |
| Census Div. 8 | 98,836 | 220,005 | 67,664 | 70,212 | 79,106 | 78,093 | |
| Census Div. 8 (1986 Boundary) | | | | | | | 82,276 |
| Red Deer | 59,680 | 120,594 | 27,084 | 38,308 | 43,445 | 39,466 | 50,026 |
| Innisfail | 9,019 | 7,697 | 2,104 | 4,825 | 2,400 | 3,428 | 2,003 |
| Lacombe | 4,030 | 9,111 | 2,742 | 2,601 | 1,712 | 3,646 | 3,414 |
| Ponoka | 4,247 | 4,440 | 13,061 | 3,411 | 5,341 | 5,720 | 2,248 |
| Sylvan lake | 3,827 | 2,573 | 1,055 | 753 | 1,487 | 717 | 2,718 |
| Census Div. 9 | 18,806 | 68,001 | 20,015 | 30,021 | 88,809 | 79,600 | |
| Census Div. 9 (1986 Boundary) | | | | | | | 15,361 |
| Rocky Mountain House | 4,902 | 5,957 | 2,370 | 3,366 | 3,411 | 4,393 | 2,129 |
| Census Div. 10 | 55,888 | 73,306 | 77,448 | 61,110 | 62,759 | 65,121 | 51,482 |
| Camrose | 17,386 | 19,415 | 8,460 | 10,531 | 5,239 | 23,482 | 5,316 |
| Lloydminster (Alberta Portion) | 14,252 | 20,785 | 21,899 | 33,009 | 37,031 | 14,615 | 28,660 |
| Vegreville | 3,769 | 8,049 | 3,698 | 3,542 | 5,433 | 4,619 | 1,580 |
| Vermilion | 3,107 | 5,449 | 7,397 | 2,719 | 2,708 | 13,928 | 5,648 |
| Census Div. 11 | 736,334 | 1,512,132 | 415,025 | 625,379 | 687,339 | 571,962 | 639,081 |
| Edmonton | 482,711 | 1,137,555 | 319,438 | 476,039 | 530,819 | 386,929 | 422,111 |
| St. Albert | 27,928 | 76,228 | 24,606 | 32,619 | 26,109 | 46,688 | 43,247 |
| Wetaskiwin | 10,168 | 16,528 | 1,652 | 5,911 | 8,062 | 7,853 | 7,083 |
| Devon | 3,920 | 6,747 | 924 | 393 | 3,039 | 2,536 | 2,863 |
| Drayton Valley | 3,901 | 1,749 | 1,044 | 5,622 | 10,760 | 7,287 | 9,573 |
| Fort Saskatchewan | 16,794 | 13,262 | 7,433 | 2,942 | 41,726 | 4,663 | 6,177 |
| Leduc | 22,639 | 18,138 | 10,136 | 24,179 | 6,006 | 5,799 | 8,459 |
| Morinville | 2,378 | 5,410 | 1,584 | 2,215 | 1,185 | 1,676 | 2,209 |
| Spruce Grove | 10,667 | 20,317 | 4,628 | 5,433 | 4,438 | 13,102 | 6,154 |
| Stony Plain | 4,664 | 12,802 | 0 | 1,583 | 0 | 5,920 | 11,446 |
| Census Div. 12 | 105,019 | 150,635 | 100,804 | 112,187 | 43,764 | 34,995 | |
| Census Div. 12 (1986 Boundary) | | | | | | | 38,355 |
| Bonnyville | 4,121 | 2,678 | 22,132 | 10,384 | 6,837 | 2,678 | 6,416 |
| Grande Centre | 1,295 | 2,253 | 1,501 | 3,185 | 1,720 | 3,469 | 2,934 |
| St. Paul | 3,070 | 4,755 | 1,496 | 14,930 | 3,446 | 7,313 | 5,098 |

## Table 5.3 continued

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Census Div. 13 | 16,813 | 55,893 | 15,151 | 14,263 | 18,057 | 38,252 | 267,506 |
| Barrhead | 3,508 | 11,601 | 2,186 | 936 | 1,304 | 2,875 | 1,163 |
| Westlock | 3,828 | 5,077 | 4,452 | 1,924 | 5,280 | 2,945 | 966 |
| Whitecourt | 2,841 | 17,973 | 382 | 1,481 | 3,174 | 24,076 | 10,211 |
| Census Div. 14 | 17,697 | 41,062 | 9,840 | 15,763 | 7,728 | 13,615 | 375,614 |
| Edson | 6,057 | 15,709 | 2,365 | 12,670 | 5,353 | 6,186 | 3,693 |
| Hinton | 4,993 | 11,090 | 3,618 | 2,628 | 2,337 | 7,042 | 367,198 |
| Census Div. 15 | 65,698 | 141,929 | 81,078 | 81,701 | 80,020 | 65,214 | |
| Census Div. 15 (1986 Boundary) | | | | | | | 12,093 |
| Canmore | 4,202 | 10,339 | 2,660 | 6,221 | 8,100 | 16,275 | 8,037 |
| Crowsnest pass | | 7,773 | 3,336 | 12,989 | 1,073 | 1,848 | 940 |
| Census Div. 16 (1986 Boundary) | | | | | | | 25,297 |
| Fort McMurray | 87,786 | 108,706 | 23,171 | 34,452 | 9,436 | 4,200 | 12,304 |
| Census Div. 17 (1986 Boundary) | | | | | | | 28,368 |
| Slave Lake | 2,581 | 11,909 | 4,798 | 19,072 | 10,602 | 5,778 | 3,094 |
| Census Div. 18 (1986 Boundary) | | | | | | | 1,872 |
| Grande Cache | 14,970 | 7,237 | 459 | 366 | 211 | 624 | 222 |
| Census Div. 19 (1986 Boundary) | | | | | | | 45,002 |
| Grande Prairie | 15,976 | 29,554 | 21,789 | 19,074 | 24,535 | 24,453 | 21,826 |
| Fairview | 3,093 | 17,861 | 1,251 | 4,325 | 3,293 | 1,420 | 1,704 |
| Peace River | 7,679 | 4,002 | 8,254 | 4,239 | 2,814 | 4,106 | 11,386 |
| **ALBERTA** | **1,831,106** | **5,130,940** | **1,386,289** | **1,798,079** | **1,840,743** | **1,859,962** | **2,440,072** |

[illegible]

## Value of Building Permits by Type, Selected Cities, Alberta, 1976-1988 (Thousands of Dollars)

| | 1976 | 1981 | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|---|---|
| Alberta | | | | | | | |
| Residential | 1,221,026 | 2,373,167 | 501,720 | 669,119 | 644,763 | 886,832 | 933,327 |
| Industrial | 73,238 | 209,674 | 98,281 | 52,352 | 64,245 | 145,468 | 744,177 |
| Commercial | 407,485 | 2,069,893 | 409,826 | 466,689 | 667,025 | 639,191 | 517,472 |
| Institutional & Government | 129,357 | 478,206 | 376,462 | 609,919 | 464,710 | 188,471 | 245,096 |
| **TOTAL** | **1,831,106** | **5,130,940** | **1,386,289** | **1,798,079** | **1,840,743** | **1,859,962** | **2,440,072** |
| Edmonton | | | | | | | |
| Residential | 296,788 | 527,438 | 119,310 | 150,811 | 136,498 | 165,066 | 173,342 |
| Industrial | 9,763 | 18,987 | 6,528 | 4,771 | 19,275 | 21,625 | 30,838 |
| Commercial | 147,363 | 496,341 | 156,906 | 197,427 | 236,948 | 184,272 | 152,970 |
| Institutional & Government | 28,797 | 94,789 | 36,694 | 123,030 | 138,098 | 15,966 | 64,961 |
| **TOTAL** | **482,711** | **1,137,555** | **319,438** | **476,039** | **530,819** | **386,929** | **422,111** |
| Calgary | | | | | | | |
| Residential | 273,917 | 1,075,033 | 125,903 | 192,669 | 200,418 | 349,109 | 387,041 |
| Industrial | 12,628 | 39,779 | 22,638 | 3,721 | 18,196 | 9,527 | 26,661 |
| Commercial | 116,294 | 1,178,401 | 141,745 | 132,780 | 248,118 | 239,398 | 202,261 |
| Institutional & Government | 44,978 | 152,266 | 108,129 | 145,109 | 102,881 | 49,534 | 44,432 |
| **TOTAL** | **447,817** | **2,445,479** | **398,415** | **474,279** | **569,613** | **647,568** | **660,395** |
| Lethbridge | | | | | | | |
| Residential | 46,164 | 51,561 | 17,728 | 12,954 | 16,662 | 20,383 | 24,940 |
| Industrial | 1,207 | 6,765 | 4,884 | 960 | 265 | 538 | 1,062 |
| Commercial | 9,899 | 20,474 | 7,405 | 8,329 | 12,215 | 35,228 | 23,449 |
| Institutional & Government | 2,974 | 10,716 | 12,973 | 81,134 | 13,490 | 3,644 | 10,172 |
| **TOTAL** | **60,244** | **89,516** | **42,990** | **103,377** | **42,632** | **59,793** | **59,623** |
| Medicine Hat | | | | | | | |
| Residential | 35,443 | 34,615 | 8,078 | 9,063 | 15,204 | 17,672 | 14,304 |
| Industrial | 1,911 | 1,185 | 269 | 7,528 | 697 | 4,073 | 590 |
| Commercial | 7,655 | 9,373 | 3,940 | 9,776 | 7,271 | 4,309 | 4,116 |
| Institutional & Government | 1,691 | 12,302 | 17,543 | 39,016 | 3,430 | 3,484 | 23,960 |
| **TOTAL** | **46,700** | **57,475** | **29,830** | **65,383** | **26,602** | **29,538** | **42,970** |
| Red Deer | | | | | | | |
| Residential | 31,937 | 75,883 | 10,311 | 14,231 | 23,204 | 30,296 | 27,771 |
| Industrial | 1,238 | 2,389 | 4,163 | 769 | 142 | 704 | 1,294 |
| Commercial | 18,594 | 25,679 | 6,253 | 6,487 | 11,232 | 8,370 | 13,763 |
| Institutional & Government | 7,911 | 16,643 | 6,357 | 16,821 | 8,867 | 96 | 7,198 |
| **TOTAL** | **59,680** | **120,594** | **27,084** | **38,308** | **43,445** | **39,466** | **50,026** |

Source Statistics Canada, Building Permits, Cat 64-203

## Forest Production by Volume and Value on Crown Lands, Alberta, 1987

| Product | Units | Volume | Value ($'000,000) |
|---|---|---|---|
| Lumber | Mfbm | 1,521,000 | 306 |
| Pulp | ADMT | 467,000 | 358 |
| OSB/Waferboard | MSF 3/8" | 582,000 | 194 |
| Plywood | MSF 3/8" | 230,000 | 90 |
| Medium Density Fibreboard | MSF 3/8" | 95,000 | 19 |
| Fuelwood | cords | 197,000 | 26 |
| Roundwood | $m^3$ | 22,000 | 3 |
| Railway Ties | number | 1,900 | – |
| Christmas Trees | number | 30,000 | – |
| Transplants | number | 14,000 | – |
| **TOTAL** | | | **996** |

mfbm - thousand board feet
ADMT - air dried metric tonnes
MSF 3/8" - thousand square feet 3/8" basis
$m^3$ - cubic metres

Source: Alberta Forest Service

## Annual Volume of Timber Harvested from Crown Lands, By Type of Product, Alberta, Fiscal Years 1978-1988 (Thousands of Cubic Metres)

| | 1978-79 | 1979-80 | 1980-81 | 1981-82 | 1982-83 | 1983-84 | 1984-85 | 1985-86 | 1986-87 | 1987-88 |
|---|---|---|---|---|---|---|---|---|---|---|
| Sawlogs, Coniferous | 2,937 | 3,911 | 3,783 | 4,064 | 4,123 | 5,822 | 5,242 | 5,317 | 6,588 | 7,036 |
| Sawlogs, Deciduous | 25 | 18 | 106 | 132 | 116 | 352 | 371 | 496 | 688 | 787 |
| Roundwood | 82 | 171 | 148 | 150 | 161 | 188 | 74 | 39 | 41 | 29 |
| Pulpwood | 1,547 | 1,587 | 1,326 | 1,115 | 1,012 | 816 | 805 | 1,000 | 823 | 421 |
| Fuelwood | 60 | 64 | 66 | 86 | 131 | 124 | 96 | 98 | 88 | 61 |
| Railway Ties | 22 | 14 | 24 | 18 | 18 | 13 | 13 | 7 | 3 | – |
| **TOTAL*** | **4,673** | **5,765** | **5,453** | **5,565** | **5,561** | **7,315** | **6,601** | **6,957** | **8,231** | **8,334** |

* Excludes Slabs and Woodchips

Source: Alberta Forest Service

## Area - Crown and Private Land, Alberta, 1988

| | KM² | Percent |
|---|---|---|
| Crown Land | 476,270 | 72 |
| Federal (National Parks, Department of National Defence) | 69,689 | 11 |
| Provincial (Parks, Wilderness Areas, Non-Settled Public Lands) | 406,581 | 61 |
| Private Lands | 184,915 | 28 |
| **PROVINCIAL TOTAL** | **661,185** | **100** |

Source: Alberta Forest Service

## Reforestation Activity, Alberta Forest Service (AFS) and Alberta Forest Industry (AFI) Firms, Alberta, 1971/72-1987/88

| Year | | Area Scarified (Hectares) | Area Seeded (Hectares) | Area Thinned (Hectares) | Seed Extracted (Kg) | Seedlings Planted Bare Root ('000) | Container ('000) |
|---|---|---|---|---|---|---|---|
| 1971-72 | AFS | 7,243 | 5,385 | 1,374 | 1,107 | 1,655 | 513 |
| | AFI | 5,452 | 217 | – | 92 | – | 644 |
| 1976-77 | AFS | 4,757 | 2,898 | 546 | 9,089 | 828 | 2,295 |
| | AFI | 9,849 | 3,427 | 37 | 6,984 | 104 | 3,285 |
| 1980-81 | AFS | 6,102 | 4,687 | – | 4,365 | 769 | 3,754 |
| | AFI | 6,484 | 1,948 | 216 | 1,696 | 30 | 6,774 |
| 1981-82 | AFS | 5,964 | 3,127 | 251 | 1,159 | 5,914 | 2,247 |
| | AFI | 7,604 | 1,574 | 383 | 460 | 142 | 6,484 |
| 1982-83 | AFS | 8,131 | 3,212 | 543 | 8,638 | 3,491 | 3,712 |
| | AFI | 8,480 | 2,158 | 152 | 504 | 2,729 | 4,202 |
| 1983-84 | AFS | 8,532 | 3,331 | 720 | 6,493 | 4,202 | 6,358 |
| | AFI | 11,489 | 3,357 | 27 | 9,405 | 1,754 | 4,354 |
| 1984-85 | AFS | 6,911 | 5,303 | 68 | 3,115 | 2,122 | 6,709 |
| | AFI | 11,171 | 3,133 | 442 | N/A | 1,095 | 6,350 |
| 1985-86 | AFS | 7,393 | 2,297 | 803 | 2,686 | 2,193 | 3,325 |
| | AFI | 12,009 | 3,996 | 202 | N/A | 1,540 | 4,908 |
| 1986-87 | AFS | 6,502 | 1,628 | 316 | 1,322 | 5,091 | 5,923 |
| | AFI | 15,866 | 3,212 | 509 | 3,676 | 2,330 | 6,143 |
| 1987-88 | AFS | 6,904 | 1,721 | 92 | 2,237 | 5,735 | 2,413 |
| | AFI | 22,059 | 8,226 | 229 | 10,140 | 1,196 | 8,941 |

Source Alberta Forest Service

# TOURISM

## Visitors to Alberta National Parks, 1976 and 1980-1987 (Thousands)

| **Park** | **1976** | **1980** | **1981** | **1982** | **1983** | **1984** | **1985** | **1986** | **1987** |
|---|---|---|---|---|---|---|---|---|---|
| Banff | 3,038 | 3,649 | 3,913 | 3,489 | 3,195 | 3,210 | 3,258 | 3,349 | 3,330 |
| Jasper | 1,622 | 1,929 | 1,972 | 1,846 | 1,871 | 1,859 | 1,804 | 2,005 | 1,930 |
| Waterton | 570 * | 667 | 642 | 679 | 670 | 641 | 605 | 574 | 596 |
| Elk Island | 328 | 420 | 496 | 434 | 394 | 371 | 336 | 330 | 364 |
| Wood Buffalo | – | – | 2 | 2 | 1 | 3 | 2 | – | – |

Source: Canada Parks Service

## Estimated Tourism Receipts From Resident and Non-Resident Travel, Alberta, 1981-1988 (Millions of Dollars)

| **Year** | **Alberta Travellers** | **Other Cdn. Travellers** | **U.S.A. Travellers** | **Overseas Travellers** | **Total Receipts** |
|---|---|---|---|---|---|
| 1981 | 801 | 641 | 171 | 70 | 1,683 |
| 1982 * | 551 | 605 | 175 | 81 | 1,412 |
| 1983 | 588 | 652 | 210 | 83 | 1,533 |
| 1984 | 805 | 568 | 229 | 89 | 1,691 |
| 1985 | 922 | 633 | 237 | 84 | 1,876 |
| 1986 * | 1,097 | 666 | 361 | 134 | 2,258 |
| 1987 | 1,175 | 724 | 393 | 164 | 2,456 |
| 1988 | 1,235 | 783 | 425 | 212 | 2,655 |

* Revised method of calculating expenditures

Source: Alberta Tourism

## Persons and Vehicles Entering Through Canada Customs Ports, Alberta, 1985-1988

| | **1985** | **1986** | **1987** | **1988** |
|---|---|---|---|---|
| U.S. Vehicles Entering Through Alberta/U.S.A. Border Ports (1) | 109,871 | 108,456 | 117,394 | 119,455 |
| U.S. Vehicles Entering Through Canadian Customs Ports in Alberta (1) | | | | |
| United States Visitors | 457,691 | 477,510 | 510,279 | 560,527 |
| Overseas Visitors | 73,985 | 82,001 | 96,635 | 119,591 |
| Canadian Residents Returning (1) | | | | |
| From the United States | 733,943 | 709,673 | 777,662 | 814,635 |
| From Overseas | 118,497 | 105,101 | 118,247 | 110,312 |

Source: Statistics Canada, Travel Between Canada and Other Countries, Cat. No. 66-001

## Standard Thirty Years (1951-1980) Normals of Temperature, Precipitation, and Frost, Representative Locations, Alberta

| Location | Altitude (Metres) | Temperature °C Extreme Max. | Extreme Min. | January Mean Daily Max. | January Mean Daily Min. | July Mean Daily Max. | July Mean Daily Min. | Precipitation (mm) (mm) Mean Annual Rainfall | Mean Annual Snowfall | Mean Frost Free Days |
|---|---|---|---|---|---|---|---|---|---|---|
| Acme | 905 | 36.7 | -43.3 | -8.9 | -19.4 | 24.4 | 9.3 | 307.5 | 132.8 | 103 |
| Aden | 1,036 | 39.4 | -40.0 | -4.1 | -14.8 | 26.2 | 11.9 | 254.4 | 151.0 | 129 |
| Alliance | 716 | 37.2 | -49.4 | -11.6 | -20.8 | 23.9 | 10.3 | 326.4 | 127.7 | 107 |
| Altawan | 945 | 41.1 | -45.6 | -9.3 | -21.0 | 28.8 | 10.7 | 231.9 | 137.7 | 87 |
| Amisk | 701 | 34.4 | -44.4 | -11.3 | -21.1 | 23.8 | 10.1 | 305.4 | 83.8 | 90 |
| Andrew | 617 | 32.8 | -44.4 | -13.4 | -23.4 | 23.4 | 10.5 | 334.3 | 91.7 | 118 |
| Athabasca | 610 | 34.4 | -46.1 | -12.9 | -22.9 | 22.5 | 10.0 | 352.6 | 140.6 | 111 |
| Banff | 1,397 | 34.4 | -51.1 | -6.5 | -16.4 | 22.3 | 7.2 | 263.1 | 250.9 | 89 |
| Beaver Mines | 1,286 | 35.6 | -45.6 | -3.9 | -14.2 | 23.1 | 7.9 | 339.6 | 304.8 | 87 |
| Bowden | 915 | 34.4 | -45.6 | -8.4 | -19.7 | 22.8 | 8.8 | 354.8 | 144.9 | 102 |
| Bow Island | 799 | 40.6 | -41.7 | -6.0 | -16.6 | 27.6 | 12.4 | 249.1 | 94.2 | 125 |
| Brooks | 758 | 38.9 | -45.6 | -8.4 | -20.5 | 25.8 | 10.8 | 240.8 | 104.2 | 114 |
| Calgary | 1,067 | 33.9 | -40.0 | -5.2 | -16.9 | 22.9 | 9.4 | 283.1 | 106.1 | 110 |
| Calmar | 716 | 36.7 | -49.4 | -10.1 | -21.4 | 23.1 | 9.5 | 363.2 | 125.5 | 112 |
| Camrose | 732 | 36.7 | -47.8 | -11.9 | -21.9 | 22.8 | 10.6 | 334.5 | 117.0 | 113 |
| Cardston | 1,154 | 38.9 | -41.7 | -2.3 | -14.5 | 25.0 | 9.4 | 321.0 | 229.1 | 111 |
| Claresholm | 1,014 | 33.9 | -37.8 | -4.0 | -15.8 | 25.2 | 11.0 | 256.8 | 210.1 | 130 |
| Cold Lake | 541 | 36.1 | -48.3 | -14.0 | -23.9 | 22.9 | 10.9 | 337.4 | 135.4 | 105 |
| Coleman | 1,341 | 33.9 | -41.1 | -4.7 | -14.1 | 23.0 | 6.2 | 350.9 | 218.1 | 46 |
| Columbia Ice Fields | 1,981 | 26.1 | -41.1 | -9.4 | -19.0 | 15.2 | 2.9 | 238.6 | 642.9 | 16 |
| Consort | 753 | 39.4 | -46.1 | -13.2 | -24.0 | 24.7 | 8.9 | 257.2 | 85.8 | 88 |
| Coronation | 791 | 37.8 | -44.4 | -11.6 | -21.3 | 24.0 | 10.5 | 254.7 | 137.0 | 115 |
| Cowley | 1,189 | 35.6 | -43.3 | -4.3 | -15.9 | 24.2 | 7.3 | 316.3 | 233.1 | 83 |
| Craigmyle | 841 | 37.2 | -45.0 | -9.8 | -19.7 | 25.0 | 9.7 | 280.2 | 107.7 | 100 |
| Crossfield | 1,128 | 34.4 | -40.6 | -6.4 | -17.6 | 22.5 | 8.3 | 375.5 | 132.8 | 92 |
| Drumheller | 687 | 40.6 | -40.6 | -8.9 | -20.5 | 27.3 | 11.2 | 236.2 | 89.5 | 113 |
| Eckville | 960 | 33.9 | -45.6 | -9.6 | -19.8 | 22.3 | 8.6 | 332.1 | 162.2 | 94 |
| Edmonton | 671 | 34.4 | -48.3 | -10.7 | -19.2 | 23.0 | 11.8 | 345.6 | 135.7 | 140 |
| Edson | 923 | 32.2 | -43.3 | -8.4 | -20.3 | 22.2 | 7.8 | 394.7 | 196.4 | 70 |
| Elk Point | 594 | 37.8 | -53.3 | -14.0 | -25.0 | 23.1 | 9.7 | 335.6 | 118.2 | 88 |
| Ellerslie | 694 | 33.3 | -47.8 | -11.5 | -21.7 | 22.4 | 9.6 | 338.6 | 113.6 | 109 |
| Empress | 613 | 42.2 | -47.8 | -10.2 | -21.2 | 27.3 | 12.1 | 202.6 | 59.9 | 117 |
| Entrance | 1,006 | 37.8 | -51.1 | -7.3 | -20.4 | 22.1 | 6.4 | 345.5 | 163.6 | 60 |
| Foremost | 884 | 41.1 | -43.3 | -6.3 | -16.8 | 26.7 | 11.1 | 233.6 | 116.2 | 129 |
| Forestburg | 671 | 35.6 | -45.0 | -9.5 | -20.4 | 23.8 | 11.8 | 323.1 | 71.4 | 137 |
| Fort Assiniboine | 671 | 33.3 | -48.0 | -11.1 | -24.8 | 22.9 | 7.9 | 360.8 | 119.9 | 79 |
| Fort Chipewyan | 232 | 34.4 | -50.0 | -20.3 | -31.8 | 22.4 | 9.7 | 245.1 | 158.4 | 91 |
| Fort MacLeod | 950 | 43.3 | -45.0 | -3.7 | -15.3 | 25.8 | 10.7 | 284.5 | 145.5 | 125 |
| Fort McMurray | 369 | 36.1 | -50.6 | -16.5 | -27.1 | 23.1 | 9.5 | 332.8 | 163.8 | 84 |
| Fort Saskatchewan | 625 | 35.6 | -45.6 | -11.3 | -21.6 | 23.5 | 10.6 | 325.8 | 99.7 | 109 |
| Ghost RS | 1,434 | 32.8 | -40.6 | -3.9 | -16.7 | 20.9 | 5.7 | 347.3 | 216.2 | 58 |
| Grande Cache | 1,250 | 31.0 | -40.0 | -7.1 | -17.5 | 20.5 | 7.1 | 369.1 | 278.1 | 86 |

## Table 8.1 continued

| | | Temperature C | | | | | | Precipitation (mm) (mm) | | Mean Frost Free Days |
|---|---|---|---|---|---|---|---|---|---|---|
| | Altitude | Extreme | | January Mean Daily | | July Mean Daily | | Mean Annual | | |
| Location | (Metres) | Max. | Min. | Max. | Min. | Max. | Min. | Rainfall | Snowfall | |
| Grande Prairie | 669 | 34.4 | -52.2 | -12.4 | -23.0 | 22.1 | 9.7 | 295.0 | 179.8 | 116 |
| Hanna | 817 | 38.9 | -45.6 | -10.2 | -21.0 | 24.9 | 10.6 | 274.8 | 113.1 | 119 |
| High Level | 324 | 34.4 | -50.6 | -18.5 | -30.6 | 22.8 | 8.7 | 257.9 | 163.6 | 71 |
| High River | 1,219 | 37.2 | -45.0 | -4.7 | -17.5 | 23.2 | 7.3 | 316.3 | 172.0 | 75 |
| Hinton | 1,013 | 33.3 | -41.1 | -7.0 | -17.9 | 22.1 | 6.7 | 390.7 | 119.2 | 63 |
| Jasper | 1,061 | 36.7 | -46.7 | -7.8 | -17.8 | 22.5 | 7.6 | 278.7 | 152.4 | 90 |
| Jenner | 756 | 42.2 | -48.9 | -7.9 | -20.4 | 27.9 | 10.2 | 286.1 | 77.2 | 106 |
| Kananaskis | 1,390 | 33.9 | -45.6 | -4.0 | -16.3 | 21.8 | 6.3 | 360.2 | 291.6 | 58 |
| Lac La Biche | 565 | 31.7 | -46.1 | -13.2 | -24.1 | 22.6 | 9.6 | 367.6 | 133.0 | 105 |
| Lacombe | 847 | 38.3 | -49.4 | -10.0 | -21.0 | 23.1 | 9.2 | 326.3 | 122.7 | 99 |
| Lethbridge | 929 | 39.4 | -42.8 | -4.5 | -16.0 | 26.1 | 11.0 | 269.2 | 175.8 | 124 |
| Lloydminster | 646 | 37.8 | -46.1 | -13.8 | -22.7 | 23.4 | 11.1 | 330.6 | 93.9 | 120 |
| Manyberries | 934 | 40.6 | -42.8 | -7.6 | -18.7 | 26.8 | 11.6 | 220.6 | 133.5 | 123 |
| Medicine Hat | 717 | 42.2 | -46.1 | -7.0 | -18.3 | 27.3 | 12.4 | 236.2 | 125.5 | 129 |
| Milk River | 975 | 41.1 | -40.6 | -5.5 | -16.0 | 26.6 | 11.1 | 226.6 | 84.1 | 124 |
| Olds | 1,040 | 37.2 | -43.9 | -7.7 | -18.7 | 22.4 | 9.1 | 353.2 | 135.1 | 109 |
| Oyen | 792 | 35.6 | -42.0 | -11.1 | -20.4 | 24.1 | 11.1 | 245.6 | 107.8 | 124 |
| Peace River | 571 | 36.7 | -49.4 | -14.9 | -25.6 | 22.3 | 9.0 | 256.4 | 146.4 | 93 |
| Pincher Creek | 1,145 | 35.6 | -41.7 | -4.0 | -14.9 | 24.5 | 8.3 | 298.4 | 316.2 | 106 |
| Raymond | 957 | 37.8 | -45.0 | -4.2 | -15.6 | 25.8 | 10.2 | 260.9 | 156.7 | 120 |
| Red Deer | 847 | 37.2 | -50.6 | -9.7 | -20.3 | 23.0 | 9.9 | 328.6 | 130.1 | 103 |
| Rimbey | 914 | 32.8 | -44.4 | -9.4 | -19.5 | 22.2 | 8.9 | 367.2 | 112.2 | 107 |
| Robb | 1,130 | 32.2 | -42.2 | -7.1 | -19.5 | 21.3 | 6.3 | 416.3 | 208.4 | 72 |
| Rochester | 648 | 33.9 | -49.4 | -13.1 | -24.1 | 22.5 | 8.6 | 377.3 | 97.7 | 75 |
| Rocky Mountain House | 1,015 | 33.3 | -43.9 | -7.4 | -18.5 | 22.0 | 8.6 | 389.3 | 187.8 | 100 |
| Sedgewick | 686 | 39.4 | -52.2 | -11.8 | -22.2 | 23.9 | 10.3 | 305.7 | 114.8 | 94 |
| Shining Bank | 829 | 32.8 | -49.4 | -9.7 | -23.1 | 21.5 | 7.4 | 366.1 | 124.0 | 85 |
| Sibbald | 716 | 40.6 | -46.1 | -11.5 | -22.4 | 26.1 | 10.1 | 232.2 | 88.6 | 95 |
| Stettler | 823 | 37.8 | -46.7 | -10.4 | -20.1 | 23.7 | 10.3 | 321.5 | 108.8 | 118 |
| Strathmore | 930 | 35.6 | -40.6 | -8.3 | -19.1 | 24.0 | 9.2 | 283.0 | 138.0 | 110 |
| Taber | 808 | 40.6 | -43.3 | -5.3 | -17.1 | 26.3 | 11.4 | 251.7 | 129.9 | 131 |
| Thorsby | 744 | 36.7 | -48.3 | -9.5 | -19.2 | 23.1 | 10.2 | 366.8 | 100.2 | 103 |
| Three Hills | 841 | 40.0 | -48.3 | -9.5 | -21.7 | 24.9 | 8.1 | 281.7 | 109.1 | 76 |
| Trochu | 892 | 36.1 | -44.4 | -8.9 | -20.8 | 24.7 | 8.2 | 239.5 | 124.7 | 93 |
| Turner Valley | 1,237 | 32.8 | -45.6 | -4.5 | -19.2 | 21.4 | 7.3 | 342.7 | 231.6 | 79 |
| Valleyview | 762 | 33.3 | -46.1 | -10.5 | -21.0 | 22.4 | 9.2 | 363.7 | 168.7 | 105 |
| Vauxhall | 779 | 39.4 | -46.1 | -6.5 | -18.9 | 26.8 | 10.3 | 228.9 | 118.5 | 113 |
| Vegreville | 636 | 35.6 | -51.1 | -12.4 | -23.8 | 23.2 | 9.4 | 319.8 | 83.8 | 83 |
| Vermillion | 619 | 37.2 | -50.6 | -13.1 | -23.6 | 23.2 | 9.8 | 313.2 | 105.8 | 100 |
| Viking | 691 | 39.4 | -56.1 | -13.3 | -22.7 | 23.9 | 10.3 | 341.5 | 107.2 | 107 |
| Vilna | 640 | 34.4 | -48.3 | -13.8 | -25.2 | 22.5 | 8.3 | 352.0 | 135.6 | 71 |
| Vulcan | 991 | 37.8 | -35.0 | -6.9 | -17.4 | 25.4 | 9.7 | 295.9 | 142.3 | 116 |
| Wanham | 607 | 33.9 | -48.3 | -13.1 | -23.3 | 22.0 | 9.7 | 301.3 | 159.6 | 109 |
| Wetaskiwin | 756 | 37.2 | -50.0 | -10.6 | -20.3 | 23.1 | 10.2 | 350.9 | 140.4 | 114 |
| Whitecourt | 741 | 38.9 | -50.0 | -10.8 | -22.3 | 22.2 | 7.9 | 395.8 | 173.7 | 69 |

## Highways and Roadways, Graded, Gravelled, Oil Treated and Paved, Rural Areas (Kilometers), 1980-1988

| | Graded | Gravelled | Oil Treated | 2-Lane | 4-Lane | 6-Lane | Total | Total |
|---|---|---|---|---|---|---|---|---|
| Primary Highways | | | | | | | | |
| 1980 | – | 1,344 | 1,488 | 9,507 | 613 | 43 | 10,163 | 12,995 |
| 1981 | – | 1,409 | 1,281 | 9,748 | 613 | 43 | 10,404 | 13,094 |
| 1982 | – | 1,367 | 1,103 | 10,165 | 599 | 40 | 10,804 | 13,274 |
| 1983 | – | 1,314 | 976 | 10,279 | 703 | 40 | 11,022 | 13,312 |
| 1984 | – | 1,122 | 759 | 10,398 | 844 | 51 | 11,293 | 13,174 |
| 1985 | – | 1,083 | 569 | 10,777 | 897 | 65 | 11,739 | 13,391 |
| 1986 | – | 1,011 | 458 | 10,941 | 966 | 62 | 11,969 | 13,438 |
| 1987 | – | 950 | 420 | 11,020 | 1,026 | 56 | 12,102 | 13,472 |
| 1988 | – | 887 | 349 | N/A | N/A | N/A | 12,262 | 1,236 |
| Approach Roads | | | | | | | | |
| 1980 | – | 38 | 42 | 240 | – | – | 240 | 320 |
| 1981 | – | 30 | 50 | 240 | – | – | 240 | 320 |
| 1982 | – | 29 | 44 | 263 | – | – | 263 | 336 |
| 1983 | – | 20 | 33 | 302 | – | – | 302 | 355 |
| 1984 | – | 21 | 23 | 309 | – | – | 309 | 353 |
| 1985 | – | 26 | 20 | 317 | – | – | 317 | 363 |
| 1986 | – | 22 | 20 | 303 | – | – | 303 | 345 |
| 1987 | – | 27 | 18 | 306 | – | – | 306 | 351 |
| 1988 | – | 23 | 16 | 323 | – | – | 323 | 362 |
| Park, Secondary and Local Roads | | | | | | | | |
| 1980 | 24,718 | 96,658 | 11,567 | 2,528 | – | – | 2,528 | 135,471 |
| 1981 | 24,606 | 97,726 | 11,685 | 3,432 | – | – | 3,432 | 137,449 |
| 1982 | 23,265 | 99,971 | 9,785 | 3,487 | – | – | 3,487 | 136,508 |
| 1983 | 23,115 | 101,336 | 9,449 | 3,897 | – | – | 3,897 | 137,797 |
| 1984 | 22,227 | 102,218 | 9,363 | 4,264 | – | – | 4,264 | 138,072 |
| 1985 | 19,017 | 103,965 | 9,026 | 4,172 | – | – | 4,172 | 136,180 |
| 1986 | 18,447 | 105,010 | 8,872 | 4,514 | – | – | 4,514 | 136,843 |
| 1987 | 17,037 | 106,609 | 8,315 | 4,922 | – | – | 4,922 | 136,883 |
| 1988 | 16,148 | 107,845 | 8,376 | 5,356 | – | – | 5,356 | 137,725 |
| **TOTAL** | | | | | | | | |
| 1980 | 24,718 | 98,040 | 13,097 | 12,275 | 613 | 43 | 12,931 | 148,786 |
| 1981 | 24,606 | 99,165 | 13,016 | 13,420 | 613 | 43 | 14,076 | 150,863 |
| 1982 | 23,265 | 101,367 | 10,932 | 13,915 | 599 | 40 | 14,554 | 150,118 |
| 1983 | 23,115 | 102,670 | 10,458 | 14,478 | 703 | 40 | 15,221 | 151,464 |
| 1984 | 22,227 | 103,371 | 10,145 | 14,971 | 844 | 51 | 15,866 | 151,609 |
| 1985 | 19,017 | 105,074 | 9,615 | 16,650 | 897 | 65 | 17,612 | 151,318 |
| 1986 | 18,447 | 106,043 | 9,350 | 15,758 | 966 | 62 | 16,786 | 150,626 |
| 1987 | 17,037 | 107,586 | 8,753 | 16,248 | 1,026 | 56 | 17,330 | 150,706 |
| 1988 | 16,148 | 108,755 | 8,741 | 5,679 | | | 5,679 | 139,323 |

Source: Alberta Transportation

## Motor Vehicle Registrations by Type, Alberta, 1987 and 1988

| **Vehicle Type** | **1987** | **1988** |
|---|---|---|
| Passenger Car | 1,014,332 | 1,020,052 |
| Truck | 511,617 | 510,507 |
| Bus | 8,856 | 9,042 |
| Rental Vehicle | 8,738 | 33,747 |
| Taxi | 3,485 | 3,336 |
| School Bus | 4,488 | 3,169 |
| Trailer | 320,301 | 346,614 |
| Motorcycle | 48,379 | 45,343 |
| Other | 160,841 | 174,737 |
| **TOTAL** | **2,081,037** | **2,146,547** |

[illegible]

## Landings Plus Take-Offs, Itinerant and Local Flights, Selected Airports, Alberta, 1971 and 1981-1987 (Number)

| | **1971** | **1981** | **1982** | **1983** | **1984** | **1985** | **1986** | **1987** |
|---|---|---|---|---|---|---|---|---|
| Calgary International | 180,009 | 233,170 | 198,467 | 187,731 | 195,230 | 192,106 | 178,826 | 195,060 |
| Edmonton Municipal | 175,825 | 185,963 | 144,221 | 132,306 | 130,111 | 132,029 | 126,224 | 119,698 |
| Edmonton International | 84,812 | 94,937 | 80,885 | 75,867 | 76,044 | 79,425 | 81,173 | 79,342 |
| Footner Lake | 9,399 | 19,103 | 20,344 | 17,405 | 17,956 | n/a | n/a | n/a |
| Fort Chipewyan | — | 5,524 | 5,607 | 6,665 | 4,297 | 5,972 | 5,802 | n/a |
| Fort McMurray | 9,484 | 62,843 | 60,753 | 51,865 | 58,647 | 58,903 | 58,306 | 52,893 |
| Grande Prairie | 38,496 | 71,820 | 46,793 | 41,162 | 40,463 | 36,912 | 37,885 | 42,846 |
| Lethbridge | 50,540 | 57,180 | 45,980 | 44,944 | 46,401 | 37,663 | 47,506 | 41,239 |
| Lloydminster | — | — | — | 17,350 | 22,735 | 25,622 | 19,089 | 16,874 |
| Medicine Hat | 13,885 | 31,584 | 21,444 | 19,050 | 20,763 | 21,138 | 19,997 | 17,669 |
| Peace River | 16,553 | 28,262 | 26,612 | 30,627 | 27,276 | 23,463 | 20,584 | 16,453 |
| Rainbow Lake | 3,444 | 2,385 | 2,515 | 2,649 | 2,703 | 2,602 | 2,088 | n/a |
| Red Deer | 43,858 | 55,979 | 43,183 | 48,336 | 48,496 | 44,647 | 34,187 | 36,349 |
| Slave Lake | — | 19,598 | 15,585 | 12,576 | 13,090 | 13,980 | 16,028 | 2,635 |
| Springbank | 142,709 | 231,736 | 170,218 | 137,771 | 120,190 | 125,657 | 116,819 | 122,369 |
| Vermillion | 1,366 | 12,440 | 736 | n/a | n/a | n/a | n/a | n/a |
| Whitecourt | 3,509 | 20,620 | 19,270 | 14,220 | 8,557 | 9,480 | 9,527 | 8,879 |

[illegible]

## Deplaned Plus Enplaned Passengers, Airmail and Cargo Freight, Scheduled Airline Flights, Calgary and Edmonton Airports, 1971-1988

| | Edmonton International | | | Edmonton Municipal | | | Calgary International | | |
|---|---|---|---|---|---|---|---|---|---|
| | Passengers ('000) | Mail ('000 of Kilograms) | Cargo ('000 of Kilograms) | Passengers ('000) | Mail ('000 of Kilograms) | Cargo ('000 of Kilograms) | Passengers ('000) | Mail ('000 of Kilograms) | Cargo ('000 of Kilograms) |
| 1971 | 605 | 2,606 | 8,374 | 387 | 875 | 3,890 | 1,262 | 2,598 | 9,140 |
| 1976 | 1,443 | 5,243 | 18,331 | 575 | 211 | 2,149 | 2,297 | 3,917 | 16,751 |
| 1981 | 2,312 | 6,941 | 24,922 | 947 | 148 | 1,787 | 4,254 | 6,981 | 26,004 |
| 1982 | 2,033 | 6,969 | 24,952 | 789 | 173 | 2,139 | 3,797 | 8,101 | 27,590 |
| 1983 | 1,812 | 7,149 | 27,392 | 731 | 226 | 1,914 | 3,533 | 8,952 | 29,837 |
| 1984 | 1,847 | 7,266 | 28,593 | 738 | 169 | 1,830 | 3,633 | 9,680 | 35,033 |
| 1985 | 1,840 | 7,536 | 35,231 | 761 | 55 | 1,758 | 3,681 | 9,545 | 31,373 |
| 1986 | 1,965 | 7,637 | 28,900 | 692 | 14 | 1,432 | 3,815 | 8,990 | 25,860 |
| 1987 | 1,928 | N/A | 24,076 | 846 | N/A | 1,136 | 4,049 | N/A | 26,045 |
| 1988 | 2,072 | N/A | 22,730 | 965 | N/A | 1,369 | 4,549 | N/A | 30,699 |

[illegible]

## Retail Trade by Type of Outlet, Alberta, 1976-1988 (Millions of Dollars)

| | 1976 | 1981 | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---:|---:|---:|---:|---:|---:|---:|
| Combination Stores | 703.8 | 1,618.1 | 1,931.5 | 2,112.4 | 2,264.0 | 2,390.2 | 2,548.7 |
| Grocery, Confectionery & Sundries Stores | 119.8 | 392.7 | 434.5 | 518.5 | 564.7 | 554.7 | 540.8 |
| All Other Food Stores | 44.6 | 92.0 | 100.6 | 113.1 | 128.8 | 144.8 | 169.2 |
| Department Stores | 841.0 | 1,521.3 | 1,521.5 | 1,597.7 | 1,628.0 | 1,489.2 | 1,470.2 |
| General Merchandise Stores | 183.9 | 238.8 | 255.9 | 263.7 | 239.7 | 261.9 | 243.2 |
| General Stores | 192.8 | 442.4 | 590.3 | 577.2 | 594.9 | 661.1 | 686.6 |
| Variety Stores | 44.2 | 72.8 | 64.6 | 76.5 | 77.5 | 51.0 | 56.9 |
| Motor Vehicle Dealers | 1,241.5 | 2,405.4 | 2,202.3 | 2,987.0 | 3,139.3 | 3,296.5 | 3,635.8 |
| Used Car Dealers | 10.3 | 21.0 | 14.2 | 21.4 | 40.9 | 41.2 | 41.9 |
| Service Stations | 338.6 | 669.6 | 691.5 | 854.6 | 916.2 | 908.3 | 949.2 |
| Garages | 45.6 | 72.5 | 70.2 | 82.2 | 68.7 | 70.9 | 86.0 |
| Automotive Parts & Access. Stores | 71.0 | 220.3 | 282.0 | 284.2 | 297.1 | 327.0 | 391.2 |
| Men's Clothing Stores | 82.8 | 167.5 | 193.9 | 188.5 | 183.4 | 194.1 | 220.1 |
| Women's Clothing Stores | 83.5 | 199.0 | 245.3 | 300.3 | 310.8 | 331.3 | 335.9 |
| Family Clothing Stores | 76.5 | 149.0 | 185.0 | 225.7 | 243.3 | 250.3 | 260.6 |
| Specialty Shoe Stores | 0.5 | 5.0 | 11.0 | 17.0 | 19.9 | 34.8 | 39.3 |
| Family Shoe Stores | 33.8 | 72.9 | 77.3 | 90.8 | 99.1 | 86.0 | 97.6 |
| Hardware Stores | 68.6 | 77.1 | 85.1 | 103.7 | 161.8 | 147.2 | 157.9 |
| Household Furniture Stores | 69.9 | 145.5 | 133.7 | 116.2 | 97.4 | 108.9 | 126.5 |
| Household Appliance Stores | 30.1 | 49.8 | 53.8 | 63.5 | 63.3 | 84.3 | 101.3 |
| Furn., TV, Radio & Appli. Stores | 18.2 | 59.2 | 168.5 | 171.6 | 175.9 | 171.8 | 180.7 |
| Pharm., Pat. Med. & Cosmet. Stores | 143.2 | 342.0 | 522.0 | 582.9 | 648.0 | 716.2 | 805.6 |
| Book & Stationery Stores | 13.4 | 34.2 | 47.8 | 69.6 | 77.2 | 85.1 | 98.8 |
| Florists | 15.1 | 48.9 | 65.9 | 62.5 | 63.1 | 62.6 | 66.3 |
| Jewellery Stores | 44.2 | 101.5 | 101.8 | 109.3 | 131.5 | 144.4 | 159.4 |
| Sporting Goods & Access. Stores | 54.5 | 159.9 | 167.6 | 186.1 | 213.9 | 241.5 | 303.1 |
| Personal Accessories Stores | 45.0 | 115.8 | 129.2 | 143.6 | 156.1 | 165.1 | 185.7 |
| All Other Stores | 673.2 | 1,412.0 | 1,486.5 | 1,603.8 | 1,733.9 | 1,834.8 | 1,995.3 |
| All Stores | 5,289.7 | 10,906.4 | 11,833.4 | 13,523.5 | 14,338.4 | 14,855.3 | 15,953.8 |

Source: Statistics Canada, Retail Trade, Cat. No. [illegible]

## Consumer Price Indexes for Canada, Major Components, 1971-1988 (1981=100)

| | All-Items | Food | Housing | Clothing | Transportation | Health and Personal Care | Recreation, Reading and Education | Tobacco and Alcohol |
|---|---|---|---|---|---|---|---|---|
| 1971 | 42.2 | 34.4 | 44.2 | 52.2 | 42.1 | 45.2 | 52.3 | 47.8 |
| 1976 | 62.9 | 57.3 | 65.4 | 69.0 | 60.3 | 65.3 | 71.3 | 64.1 |
| 1981 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1982 | 110.8 | 107.2 | 112.5 | 105.6 | 114.1 | 110.5 | 108.7 | 115.5 |
| 1983 | 117.2 | 111.2 | 120.1 | 109.8 | 119.8 | 118.2 | 115.7 | 130.0 |
| 1984 | 122.3 | 117.4 | 124.7 | 112.5 | 124.8 | 122.8 | 119.7 | 140.6 |
| 1985 | 127.1 | 120.8 | 129.0 | 115.6 | 130.8 | 127.2 | 124.5 | 154.0 |
| 1986 | 132.4 | 126.8 | 132.9 | 118.8 | 134.9 | 132.6 | 130.3 | 172.3 |
| 1987 | 138.2 | 132.4 | 138.3 | 123.8 | 139.9 | 139.2 | 137.3 | 183.9 |
| 1988 | 143.8 | 135.9 | 144.3 | 130.2 | 142.6 | 145.3 | 145.0 | 197.4 |

Source Statistics Canada, The Consumer Price Index, Cat No [illegible]

## Consumer Price Indexes and Major Components, Edmonton and Calgary, 1971-1988 (1981=100)

| | All-Items | Food | Housing | Clothing | Transportation | Health and Personal Care | Recreation, Reading and Education | Tobacco and Alcohol |
|---|---|---|---|---|---|---|---|---|
| Edmonton | | | | | | | | |
| 1971 | 41.9 | 36.6 | 39.6 | 48.1 | 43.2 | 49.1 | 51.6 | 54.6 |
| 1976 | 62.3 | 58.1 | 61.8 | 63.9 | 62.6 | 67.2 | 69.0 | 70.3 |
| 1981 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1982 | 110.8 | 107.7 | 112.7 | 105.7 | 112.1 | 114.3 | 108.1 | 116.1 |
| 1983 | 117.2 | 111.5 | 118.8 | 109.1 | 119.2 | 122.7 | 116.1 | 134.0 |
| 1984 | 120.4 | 116.6 | 119.1 | 111.8 | 124.0 | 126.0 | 119.5 | 146.4 |
| 1985 | 124.1 | 121.4 | 120.5 | 113.9 | 129.8 | 129.6 | 124.1 | 157.9 |
| 1986 | 128.3 | 127.7 | 122.6 | 116.7 | 133.5 | 134.4 | 128.5 | 174.2 |
| 1987 | 133.7 | 133.2 | 124.8 | 121.2 | 139.6 | 139.8 | 135.7 | 200.6 |
| 1988 | 137.3 | 136.1 | 127.7 | 127.6 | 138.1 | 144.6 | 144.5 | 215.1 |
| Calgary | | | | | | | | |
| 1971 | 42.3 | 37.2 | 40.4 | 48.8 | 43.5 | 47.4 | 52.2 | 52.0 |
| 1976 | 62.7 | 59.4 | 61.2 | 66.0 | 62.7 | 66.9 | 70.6 | 67.2 |
| 1981 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1982 | 112.0 | 106.9 | 116.1 | 104.4 | 113.5 | 114.3 | 109.1 | 114.1 |
| 1983 | 117.1 | 109.7 | 119.8 | 105.6 | 120.0 | 124.1 | 116.7 | 131.2 |
| 1984 | 120.0 | 115.2 | 119.0 | 107.8 | 124.9 | 129.0 | 119.4 | 143.9 |
| 1985 | 123.5 | 120.1 | 120.0 | 110.2 | 131.6 | 132.4 | 123.6 | 154.0 |
| 1986 | 127.8 | 126.0 | 122.4 | 112.8 | 135.7 | 137.6 | 128.8 | 170.1 |
| 1987 | 132.6 | 131.3 | 123.9 | 117.2 | 141.4 | 143.3 | 135.5 | 195.3 |
| 1988 | 136.2 | 133.5 | 126.8 | 124.0 | 138.7 | 149.8 | 143.3 | 209.1 |

Source Statistics Canada, Consumer Price & Price Indexes Cat No 62-010

## Consumer Price Indexes for Regional Cities, Canada, 1971-1988 (1981=100)

| | St. John's | Halifax | Saint John | Quebec | Montreal | Ottawa | Toronto | Thunder Bay | Winnipeg | Regina | Saskatoon | Edmonton | Calgary | Vancouver |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1971 | 39.3 | 43.1 | 41.9 | 42.8 | 42.7 | 43.2 | 42.5 | 42.7 | 42.4 | 42.7 | 43.4 | 41.9 | 42.3 | 41.8 |
| 1976 | 61.9 | 63.9 | 63.3 | 62.7 | 63.0 | 63.9 | 63.2 | 64.3 | 63.9 | 62.7 | 63.6 | 62.3 | 62.7 | 64.3 |
| 1981 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1982 | 110.0 | 109.6 | 109.4 | 112.2 | 111.6 | 109.9 | 111.3 | 110.4 | 108.8 | 109.0 | 109.0 | 110.8 | 112.0 | 110.5 |
| 1983 | 117.5 | 116.7 | 116.8 | 118.3 | 117.8 | 117.3 | 118.0 | 117.1 | 116.1 | 116.0 | 115.9 | 117.2 | 117.1 | 116.6 |
| 1984 | 122.7 | 121.9 | 122.8 | 122.7 | 122.7 | 123.2 | 123.7 | 122.8 | 120.3 | 121.1 | 120.0 | 120.4 | 120.0 | 121.3 |
| 1985 | 127.8 | 127.3 | 128.0 | 128.2 | 128.1 | 128.3 | 128.5 | 128.2 | 125.3 | 125.5 | 124.2 | 124.1 | 123.5 | 125.1 |
| 1986 | 131.6 | 131.7 | 132.4 | 134.5 | 134.3 | 133.4 | 134.6 | 132.6 | 130.9 | 128.2 | 129.3 | 128.3 | 127.8 | 129.3 |
| 1987 | 135.4 | 136.4 | 136.6 | 139.7 | 140.4 | 138.7 | 142.1 | 136.9 | 136.3 | 134.5 | 135.7 | 133.7 | 132.6 | 133.3 |
| 1988 | 138.6 | 141.4 | 141.2 | 144.6 | 145.8 | 144.5 | 149.3 | 142.6 | 142.1 | 140.3 | 141.8 | 137.3 | 136.2 | 138.1 |

Source: Statistics Canada, Consumer Prices and Indexes, Cat. No. [illegible]

## Consumer Price Indexes for Provinces, Canada, 1979-1988 (1981=100)

| | Nfld. | P.E.I. | N.S. | N.B. | Queb. | Ont. | Man. | Sask. | Alta. | B.C. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1979 | 79.0 | 79.8 | 80.8 | 80.7 | 80.6 | 80.9 | 81.8 | 81.1 | 80.4 | 80.0 |
| 1980 | 88.2 | 88.1 | 89.3 | 89.0 | 89.0 | 89.2 | 89.9 | 89.5 | 88.6 | 87.5 |
| 1981 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1982 | 110.0 | 109.5 | 109.4 | 109.3 | 111.6 | 110.6 | 108.8 | 109.0 | 111.3 | 110.5 |
| 1983 | 117.4 | 115.1 | 116.4 | 116.6 | 117.7 | 117.5 | 116.0 | 116.0 | 117.0 | 116.5 |
| 1984 | 122.7 | 120.0 | 121.6 | 122.5 | 122.5 | 123.3 | 120.3 | 120.6 | 120.2 | 121.2 |
| 1985 | 127.8 | 124.5 | 126.9 | 128.1 | 127.8 | 128.3 | 125.4 | 125.1 | 123.7 | 125.0 |
| 1986 | 131.5 | 127.0 | 131.0 | 132.6 | 133.9 | 134.0 | 130.9 | 128.5 | 128.0 | 128.7 |
| 1987 | 135.2 | 131.5 | 135.5 | 136.3 | 139.8 | 140.8 | 136.4 | 134.9 | 133.1 | 132.5 |
| 1988 | 138.5 | 136.4 | 140.2 | 141.2 | 145.0 | 147.4 | 142.1 | 140.9 | 136.8 | 137.3 |

Source: Statistics Canada, Consumer Prices and Indexes, Cat. No. [illegible]

## Distribution of All Taxfilers Returns (Taxable and Non-Taxable) by Sources of Income, Alberta and Major Cities, Specified Years 1977-1986 (Millions of Dollars)

| Taxation Year | Total Number of Returns | Wages & Salaries ($) | Commissions & Other Employment Earnings | Family Allowances | Unemployment Insurance Benefits | Old Age CPP or Other Pensions | Net Business Income | Net Profess. Income | Net Commiss. Income | Net Farming or Fishing Income |
|---|---|---|---|---|---|---|---|---|---|---|
| Edmonton | | | | | | | | | | |
| 1977 | 338.6 | 3,531.5 | 109.1 | 48.9 | 38.5 | 93.5 | 60.6 | 93.9 | 11.6 | 2.5 |
| 1979 | 396.7 | 4,575.7 | 146.1 | 41.3 | 43.6 | 132.3 | 66.7 | 88.2 | 14.0 | 2.6 |
| 1981 | 443.7 | 6,359.6 | 181.6 | 50.8 | 58.7 | 241.2 | 68.4 | 119.7 | 14.9 | -5.5 |
| 1983 | 364.6 | 5,607.1 | 120.1 | 45.6 | 230.7 | 281.4 | 65.4 | 117.5 | 6.7 | -114.4 |
| 1986 | 389.9 | 5,989.6 | 137.7 | 49.6 | 260.3 | 443.8 | 85.2 | 130.1 | 14.1 | -844.0 |
| Calgary | | | | | | | | | | |
| 1977 | 297.8 | 2,973.0 | 88.6 | 40.3 | 35.6 | 93.0 | 48.5 | 92.8 | 6.8 | 3.9 |
| 1979 | 359.6 | 4,143.8 | 162.5 | 36.6 | 44.1 | 128.0 | 33.4 | 111.5 | 12.2 | 8.2 |
| 1981 | 415.6 | 6,291.9 | 270.6 | 42.5 | 56.2 | 189.6 | 36.6 | 182.5 | 20.9 | -10.1 |
| 1983 | 397.8 | 6,835.6 | 221.2 | 53.0 | 251.3 | 249.4 | 67.3 | 223.1 | 15.0 | -.9 |
| 1986 | 437.0 | 7,742.1 | 252.3 | 63.2 | 243.2 | 410.3 | 130.0 | 337.6 | 18.5 | 1.1 |
| Alberta | | | | | | | | | | |
| 1977 | 1,027.9 | 9,661.0 | 260.8 | 163.2 | 121.4 | 312.0 | 260.2 | 250.0 | 30.5 | 257.2 |
| 1979 | 1,261.0 | 13,117.5 | 406.1 | 145.2 | 142.9 | 433.0 | 287.4 | 273.1 | 39.6 | 361.8 |
| 1981 | 1,426.0 | 19,034.0 | 592.2 | 179.6 | 182.7 | 653.9 | 338.3 | 393.7 | 53.6 | 409.5 |
| 1983 | 1,400.1 | 20,798.2 | 480.1 | 214.4 | 784.8 | 905.1 | 361.2 | 456.4 | 37.8 | 281.2 |
| 1986 | 1,505.4 | 23,217.4 | 623.1 | 242.2 | 859.1 | 1,434.4 | 472.6 | 626.2 | 56.6 | 252.0 |

## Table 11.1 continued

| Taxation Year | Taxable Amounts of Dividends | Bond & Bank Interest | Mortgage Interest | Income From Trusts | Annuity & Other Cdn. Investment Income | Foreign Investment Income | Net Rental Income | Net Taxable Capital Gains | Miscellaneous Income | Total Income Assessed |
|---|---|---|---|---|---|---|---|---|---|---|
| Edmonton | | | | | | | | | | |
| 1977 | 51.4 | 142.5 | 8.2 | 7.3 | 25.3 | 2.8 | 1.3 | 42.8 | 42.0 | 4,311.1 |
| 1979 | 197.3 | 249.7 | 15.2 | 11.8 | 18.7 | 3.5 | -21.6 | 88.2 | 81.1 | 5,749.3 |
| 1981 | 352.6 | 475.4 | 19.6 | 13.1 | 41.3 | 6.5 | -19.5 | 133.8 | 125.1 | 8,282.4 |
| 1983 | 303.2 | 355.5 | 11.9 | -12.7 | 40.9 | 5.4 | 19.5 | 43.4 | 121.5 | 7,387.6 |
| 1986 | 200.4 | 433.8 | 14.1 | 15.4 | 45.1 | 7.4 | 24.8 | 62.8 | 159.2 | 8,072.6 |
| Calgary | | | | | | | | | | |
| 1977 | 58.4 | 131.1 | 6.9 | 8.3 | 27.1 | 3.2 | -.9 | 58.1 | 43.8 | 3,718.5 |
| 1979 | 220.4 | 237.2 | 7.4 | 11.1 | 24.3 | 9.9 | -16.1 | 216.0 | 119.3 | 5,509.8 |
| 1981 | 407.3 | 494.7 | 11.5 | 16.4 | 66.5 | 14.2 | -45.6 | 231.2 | 153.0 | 8,430.2 |
| 1983 | 400.8 | 368.0 | 14.4 | 10.0 | 72.2 | 19.2 | -12.9 | 97.0 | 212.4 | 9,096.4 |
| 1986 | 314.9 | 446.3 | 22.7 | 17.4 | 78.1 | 19.7 | 4.6 | 129.1 | 284.8 | 10,515.5 |
| Alberta | | | | | | | | | | |
| 1977 | 155.5 | 484.4 | 25.0 | 31.1 | 84.3 | 7.9 | 15.8 | 177.8 | 124.1 | 12,422.7 |
| 1979 | 623.8 | 831.5 | 36.9 | 36.2 | 85.6 | 15.8 | -23.2 | 274.5 | 278.2 | 17,565.8 |
| 1981 | 1,201.1 | 1,750.2 | 51.3 | 51.7 | 184.9 | 25.1 | -51.8 | 604.0 | 410.0 | 26,092.0 |
| 1983 | 1,144.0 | 1,378.8 | 53.5 | 42.6 | 203.7 | 30.8 | 42.8 | 295.2 | 502.0 | 28,013.2 |
| 1986 | 765.7 | 1,612.7 | 61.0 | 64.0 | 212.0 | 34.4 | 68.9 | 366.8 | 636.4 | 31,606.0 |

Source Revenue Canada, Taxation, Taxation Statistics

## Average Per Capita Income of Individual Income Tax Files by Census Division, Alberta, 1976-1986 (Dollars)

| | Alberta | Census Division 1 | Census Division 2 | Census Division 3 | Census Division 4 | Census Division 5 | Census Division 6 | Census Division 7 | Census Division 8 |
|---|---|---|---|---|---|---|---|---|---|
| 1976 | 11,155 | 11,213 | 10,572 | 9,517 | 11 693 | 11,193 | 11,660 | 9,223 | 9,992 |
| 1977 | 12,085 | 11,920 | 11,183 | 10,476 | 12,107 | 11,128 | 12,407 | 10,348 | 11,326 |
| 1978 | 12,054 | 11,328 | 11,080 | 9,670 | 10,277 | 10,237 | 12,932 | 9,886 | 11,078 |
| 1979 | 13,638 | 12,798 | 12,454 | 10,911 | 12,254 | 11,826 | 14,884 | 11 552 | 12,397 |
| 1980 | 15,406 | 14,382 | 14,218 | 12,228 | 13,687 | 13,534 | 16,840 | 13,403 | 14,004 |
| 1981 | 17,939 | 17,108 | 16,603 | 14,440 | 17,075 | 16,636 | 19,796 | 16,112 | 15,744 |
| 1982 | 19,702 | 18,124 | 17,767 | 15,375 | 17,906 | 17,652 | 22,079 | 16,740 | 17,134 |
| 1983 | 19 536 | 17,831 | 17,600 | 15,001 | 16,735 | 16,791 | 21,856 | 16,202 | 17,166 |
| 1984 | 19,750 | 18,052 | 17,642 | 15,100 | 17,445 | 16,782 | 22,035 | 16,774 | 17,386 |
| 1985 | 20,525 | 18 910 | 18 290 | 15 260 | 17 190 | 17,100 | 23 030 | 17,560 | 18 060 |
| 1986 | 20,523 | 18,740 | 18,230 | 15 490 | 17,660 | 16,620 | 23,140 | 17,370 | 18,120 |

## Table 11.2 continued

| | Census Division 9 | Census Division 10 | Census Division 11 | Census Division 12 | Census Division 13 | Census Division 14 | Census Division 15 | Census Medicine Hat | Census Lethbridge |
|---|---|---|---|---|---|---|---|---|---|
| 1976 | 10,534 | 9 520 | 11 586 | 11,109 | 8,970 | 11,376 | 9,652 | 11,304 | 10,676 |
| 1977 | 10,730 | 10,405 | 12,654 | 12 065 | 10,229 | 12,281 | 10,974 | 11,979 | 11,589 |
| 1978 | 11,370 | 9,974 | 12 665 | 11 466 | 9,638 | 11 565 | 10,038 | 11 546 | 11,700 |
| 1979 | 12,589 | 11,632 | 14,079 | 12,601 | 10,967 | 12,607 | 11,539 | 12 826 | 12,903 |
| 1980 | 13,965 | 13,352 | 15,812 | 14,235 | 12,137 | 14 326 | 13,133 | 14,529 | 14,529 |
| 1981 | 16,209 | 15,753 | 18,133 | 16 813 | 13,989 | 16 569 | 15,160 | 17,039 | 16,931 |
| 1982 | 17,822 | 16 609 | 20 046 | 18 963 | 15,014 | 18,243 | 15,748 | 18,171 | 18,412 |
| 1983 | 18,188 | 16,309 | 19,949 | 19,696 | 14,325 | 18,030 | 15,810 | 17,999 | 18,353 |
| 1984 | 18,468 | 16 639 | 19 999 | 20,835 | 14,794 | 18,768 | 16,472 | 18,278 | 18,481 |
| 1985 | 18,770 | 17,630 | 20 650 | 21 280 | 15,380 | 19,490 | 17,180 | 19,334 | 19,204 |
| 1986 | 18 830 | 17,230 | 20 590 | 20 980 | 15,740 | 19,590 | 17,360 | 19,128 | 19,255 |

[illegible]

## Population by Census Division, Alberta, 1971-1986

| | 1971 | | 1981 | | 1986 | |
|---|---|---|---|---|---|---|
| | No. | Percent of Total | No. | Percent of Total | No. | Percent of Total |
| 1 | 39,149 | 2.4 | 55,375 | 2.5 | 56,592 | 2.4 |
| 2 | 86,624 | 5.3 | 110,477 | 4.9 | 115,739 | 4.9 |
| 3 | 30,940 | 1.9 | 35,652 | 1.6 | 34,970 | 1.5 |
| 4 | 12,991 | 0.8 | 12,119 | 0.5 | 12,376 | 0.5 |
| 5 | 34,485 | 2.1 | 38,382 | 1.7 | 38,805 | 1.6 |
| 6 | 447,079 | 27.5 | 668,682 | 29.9 | 715,605 | 30.2 |
| 7 | 38,334 | 2.4 | 40,071 | 1.8 | 40,681 | 1.7 |
| 8 | 85,638 | 5.3 | 123,642 | 5.5 | – | – |
| 9 | 19,781 | 1.2 | 21,670 | 1.0 | – | – |
| 8 (1986 Boundry) | – | – | – | – | 116,611 | 4.9 |
| 9 | – | – | – | – | 15,999 | 0.7 |
| 10 | 65,532 | 4.0 | 78,417 | 3.5 | 79,745 | 3.4 |
| 11 | 552,461 | 33.9 | 762,041 | 34.1 | 807,504 | 34.1 |
| 12 | 54,647 | 3.4 | 84,221 | 3.8 | – | – |
| 12 (1986 Boundry) | – | – | – | – | 43,907 | 1.9 |
| 13 | 43,786 | 2.7 | 53,701 | 2.4 | 54,973 | 2.3 |
| 14 | 21,665 | 1.3 | 24,635 | 1.1 | 25,309 | 1.1 |
| 15 | 94,762 | 5.8 | 128,639 | 5.7 | – | – |
| 15 (1986 Boundry) | – | – | – | – | 22,794 | 1.0 |
| 16 | – | – | – | – | 48,779 | 2.1 |
| 17 | – | – | – | – | 48,852 | 2.1 |
| 18 | – | – | – | – | 13,587 | 0.6 |
| 19 | – | – | – | – | 72,997 | 3.1 |
| **TOTAL** | **1,627,874** | **100.0** | **2,237,724** | **100.0** | **2,365,825** | **100.0** |

## Population by Census Division, Alberta, 1988-1992

| | 1988 | | 1989 | | 1990 | | 1991 | | 1992 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | Percent of Total | No. | Percent of Total | No. | Percent of Total | No. | Percent of Total | No. | Percent of Total |
| 1 | 57,350 | 2.4 | 57,780 | 2.4 | 58,200 | 2.4 | 58,620 | 2.4 | 59,050 | 2.4 |
| 2 | 116,760 | 4.9 | 117,710 | 4.9 | 118,770 | 4.9 | 119,800 | 4.8 | 120,940 | 4.8 |
| 3 | 35,360 | 1.5 | 35,280 | 1.5 | 35,500 | 1.5 | 35,890 | 1.5 | 36,420 | 1.5 |
| 4 | 12,340 | 0.5 | 12,470 | 0.5 | 12,580 | 0.5 | 12,670 | 0.5 | 12,850 | 0.5 |
| 5 | 38,660 | 1.6 | 38,990 | 1.6 | 39,320 | 1.6 | 39,760 | 1.6 | 40,280 | 1.6 |
| 6 | 727,190 | 30.4 | 735,300 | 30.4 | 743,590 | 30.4 | 751,720 | 30.4 | 759,930 | 30.4 |
| 7 | 40,930 | 1.7 | 41,250 | 1.7 | 41,570 | 1.7 | 41,870 | 1.7 | 42,280 | 1.7 |
| 8 | 119,210 | 5.0 | 120,500 | 5.0 | 122,010 | 5.0 | 123,530 | 5.0 | 125,240 | 5.0 |
| 9 | 16,270 | 0.7 | 16,460 | 0.7 | 16,650 | 0.7 | 16,800 | 0.7 | 17,070 | 0.7 |
| 10 | 79,060 | 3.3 | 79,100 | 3.3 | 79,270 | 3.2 | 79,510 | 3.2 | 79,800 | 3.2 |
| 11 | 816,140 | 34.1 | 824,640 | 34.1 | 833,790 | 34.1 | 842,890 | 34.1 | 852,530 | 34.1 |
| 12 | 45,830 | 1.9 | 46,440 | 1.9 | 47,280 | 1.9 | 48,080 | 1.9 | 49,160 | 2.0 |
| 13 | 55,270 | 2.3 | 55,640 | 2.3 | 56,130 | 2.3 | 56,670 | 2.3 | 57,200 | 2.3 |
| 14 | 24,770 | 1.0 | 25,070 | 1.0 | 25,450 | 1.0 | 25,820 | 1.0 | 26,370 | 1.1 |
| 15 | 22,860 | 1.0 | 22,915 | 0.9 | 23,090 | 0.9 | 23,325 | 0.9 | 23,675 | 0.9 |
| 16 | 48,740 | 2.0 | 49,520 | 2.0 | 50,480 | 2.1 | 51,370 | 2.1 | 52,490 | 2.1 |
| 17 | 50,580 | 2.1 | 51,590 | 2.1 | 52,550 | 2.1 | 53,640 | 2.2 | 54,700 | 2.2 |
| 18 | 12,470 | 0.5 | 12,200 | 0.5 | 12,080 | 0.5 | 12,120 | 0.5 | 12,280 | 0.5 |
| 19 | 75,060 | 3.1 | 76,060 | 3.1 | 77,070 | 3.2 | 78,070 | 3.2 | 79,040 | 3.2 |
| **TOTAL** | **2,394,850** | **100.0** | **2,418,915** | **100.0** | **2,445,380** | **100.0** | **2,472,155** | **100.0** | **2,501,305** | **100.0** |

## Population by Census Division, Alberta, 1993-1997

| | 1993 | | 1994 | | 1995 | | 1996 | | 1997 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | Percent of Total | No. | Percent of Total | No. | Percent of Total | No. | Percent of Total | No. | Percent of Total |
| 1 | 59,480 | 2.4 | 59,790 | 2.3 | 60,160 | 2.3 | 60,510 | 2.3 | 60,840 | 2.3 |
| 2 | 122,050 | 4.8 | 123,170 | 4.8 | 124,280 | 4.8 | 125,410 | 4.8 | 126,490 | 4.8 |
| 3 | 36,980 | 1.5 | 37,620 | 1.5 | 38,260 | 1.5 | 39,030 | 1.5 | 39,940 | 1.5 |
| 4 | 13,090 | 0.5 | 13,340 | 0.5 | 13,560 | 0.5 | 13,780 | 0.5 | 14,010 | 0.5 |
| 5 | 40,770 | 1.6 | 41,340 | 1.6 | 41,930 | 1.6 | 42,540 | 1.6 | 43,210 | 1.6 |
| 6 | 767,720 | 30.3 | 775,130 | 30.3 | 782,210 | 30.2 | 789,070 | 30.2 | 795,860 | 30.1 |
| 7 | 42,680 | 1.7 | 43,070 | 1.7 | 43,420 | 1.7 | 43,850 | 1.7 | 44,260 | 1.7 |
| 8 | 126,960 | 5.0 | 128,670 | 5.0 | 130,320 | 5.0 | 132,040 | 5.1 | 133,830 | 5.1 |
| 9 | 17,360 | 0.7 | 17,630 | 0.7 | 17,940 | 0.7 | 18,270 | 0.7 | 18,560 | 0.7 |
| 10 | 80,070 | 3.2 | 80,390 | 3.1 | 80,690 | 3.1 | 81,060 | 3.1 | 81,410 | 3.1 |
| 11 | 861,880 | 34.1 | 870,910 | 34.0 | 879,820 | 34.0 | 888,490 | 34.0 | 897,290 | 33.9 |
| 12 | 50,220 | 2.0 | 51,310 | 2.0 | 52,460 | 2.0 | 53,690 | 2.1 | 55,020 | 2.1 |
| 13 | 57,760 | 2.3 | 58,350 | 2.3 | 58,960 | 2.3 | 59,560 | 2.3 | 60,240 | 2.3 |
| 14 | 26,910 | 1.1 | 27,450 | 1.1 | 28,110 | 1.1 | 28,780 | 1.1 | 29,470 | 1.1 |
| 15 | 24,045 | 1.0 | 24,500 | 1.0 | 24,960 | 1.0 | 25,480 | 1.0 | 26,000 | 1.0 |
| 16 | 53,700 | 2.1 | 54,910 | 2.1 | 56,200 | 2.2 | 57,560 | 2.2 | 58,960 | 2.2 |
| 17 | 55,730 | 2.2 | 56,830 | 2.2 | 57,900 | 2.2 | 59,000 | 2.3 | 60,090 | 2.3 |
| 18 | 12,560 | 0.5 | 12,880 | 0.5 | 13,190 | 0.5 | 13,630 | 0.5 | 14,250 | 0.5 |
| 19 | 79,960 | 3.2 | 80,900 | 3.2 | 81,760 | 3.2 | 82,690 | 3.2 | 83,540 | 3.2 |
| **TOTAL** | **2,529,925** | **100.0** | **2,558,190** | **100.0** | **2,586,130** | **100.0** | **2,614,440** | **100.0** | **2,643,270** | **100.0** |

1987-1997 population figures are estimates based on 1986 census data

Source: 1971 to 1986 figures – Statistics Canada, Census of Canada, 1986. 1987-1997 figures are estimates prepared by Alberta Bureau of Statistics

## Population - Rural and Urban, Numerical and Percentage Distribution, Alberta, Selected Years 1901-1986

| Year | Total No. | Rural No. | Percent of Total | Urban No. | Percent of Total |
|---|---|---|---|---|---|
| 1901 | 73,022 | 61,171 | 83.8 | 11,851 | 16.2 |
| 1911 | 374,295 | 264,359 | 70.6 | 109,936 | 29.4 |
| 1921 | 588,454 | 411,284 | 69.9 | 177,170 | 30.1 |
| 1931 | 731,605 | 503,723 | 68.9 | 227,882 | 31.1 |
| 1941 | 796,169 | 545,564 | 68.5 | 250,605 | 31.5 |
| 1951 | 939,501 | 509,413 | 54.2 | 430,088 | 45.8 |
| 1961 | 1,331,944 | 480,368 | 36.1 | 851,576 | 63.9 |
| 1966 | 1,463,203 | 455,796 | 31.2 | 1,007,407 | 68.8 |
| 1971 | 1,627,875 | 429,045 | 26.0 | 1,198,830 | 74.0 |
| 1976 | 1,838,037 | 444,551 | 24.2 | 1,393,486 | 75.8 |
| 1981 | 2,237,724 | 510,179 | 22.8 | 1,727,545 | 77.2 |
| 1986 | 2,365,825 | 488,067 | 20.6 | 1,877,758 | 79.4 |

Source: Statistics Canada, Census of Canada 1986

## Population of Incorporated Cities, Towns and Villages, Alberta, Selected Years 1961-1988

| | 1986 Status | Census Division | 1961 | 1971 | 1981 | 1986 | 1988 |
|---|---|---|---|---|---|---|---|
| Acme | V | 5 | 328 | 300 | 457 | 457 | 457 |
| Airdrie | C | 6 | 524 | 1,089 | 8,414 | 10,390 | 10,957 |
| Alberta Beach | SV | 13 | 135 | 320 | 485 | 425 | 425 |
| Alix | V | 8 | 631 | 565 | 837 | 793 | 793 |
| Alliance | V | 7 | 291 | 230 | 208 | 202 | 202 |
| Amisk | V | 7 | 127 | 134 | 196 | 212 | 207 |
| Andrew | V | 10 | 601 | 466 | 548 | 492 | 485 |
| Argentia Beach | SV | 11 | 0 | 2 | 4 | 3 | 3 |
| Arrowwood | V | 5 | 195 | 166 | 156 | 137 | 140 |
| Athabasca | T | 13 | 1,487 | 1,765 | 1,731 | 1,970 | 1,975 |
| Barnwell | V | 2 | 0 | 0 | 359 | 402 | 402 |
| Barons | V | 2 | 345 | 237 | 315 | 290 | 294 |
| Barrhead | T | 13 | 2,286 | 2,803 | 3,736 | 3,991 | 3,991 |
| Bashaw | T | 10 | 614 | 757 | 875 | 829 | 829 |
| Bassano | T | 2 | 815 | 861 | 1,200 | 1,186 | 1,186 |
| Bawlf | V | 10 | 203 | 182 | 350 | 375 | 375 |
| Beaumont | T | 11 | 0 | 337 | 2,638 | 3,944 | 4,189 |
| Beaverlodge | T | 19 | 897 | 1,157 | 1,937 | 1,808 | 1,808 |
| Beiseker | V | 6 | 360 | 414 | 580 | 503 | 518 |
| Bently | V | 8 | 588 | 621 | 823 | 841 | 841 |
| Berwyn | V | 19 | 347 | 474 | 557 | 661 | 661 |
| Betula Beach | SV | 11 | 0 | 0 | 0 | 10 | 10 |
| Big Valley | V | 7 | 461 | 306 | 360 | 295 | 295 |
| Birchcliff | SV | 8 | 0 | 0 | 55 | 48 | 48 |
| Bittern Lake | V | 10 | 76 | 100 | 139 | 133 | 158 |
| Black Diamond | T | 6 | 1,043 | 945 | 1,444 | 1,486 | 1,436 |
| Blackfalds | T | 8 | 477 | 904 | 1,488 | 1,688 | 1,688 |
| Blackie | V | 6 | 184 | 168 | 298 | 266 | 266 |
| Bon Accord | T | 11 | 0 | 332 | 1,376 | 1,355 | 1,355 |
| Bondiss | SV | 13 | 0 | 0 | 0 | 51 | 59 |
| Bonnyville | T | 12 | 1 736 | 2,587 | 4,454 | 5,470 | 5,575 |
| Bonnyville Beach | SV | 12 | 0 | 1 | 45 | 60 | 62 |
| Botha | V | 7 | 112 | 99 | 172 | 180 | 180 |
| Bow Island | T | 1 | 1,122 | 1,159 | 1,491 | 1,650 | 1,566 |
| Bowden | T | 8 | 437 | 560 | 989 | 967 | 967 |
| Boyle | V | 13 | 346 | 460 | 638 | 678 | 704 |
| Breton | V | 11 | 428 | 352 | 552 | 466 | 557 |
| Brooks | T | 2 | 2,827 | 3,986 | 9,421 | 9,464 | 9,464 |
| Bruderheim | Y | 10 | 299 | 350 | 1,136 | 1,131 | 1,176 |
| Burdett | V | 1 | 229 | 206 | 220 | 278 | 278 |
| Calgary | C | 6 | 249,641 | 403,319 | 592,743 | 636,104 | 657,118 |
| Calmar | T | 11 | 700 | 799 | 1,003 | 1,087 | 1,160 |
| Camrose | C | 10 | 6,939 | 8,673 | 12,570 | 12,968 | 12,968 |
| Canmore | T | 15 | 1,379 | 1,538 | 3,484 | 4,182 | 4,419 |
| Carbon | V | 5 | 371 | 343 | 434 | 429 | 429 |
| Cardston | T | 5 | 2 801 | 2,685 | 3,267 | 3,497 | 3,497 |
| Carmangay | V | 5 | 297 | 230 | 266 | 240 | 262 |

## Table 12.3 continued

| | 1986 Status | Census Division | 1961 | 1971 | 1981 | 1986 | 1988 |
|---|---|---|---|---|---|---|---|
| Caroline | V | 9 | 321 | 339 | 436 | 364 | 387 |
| Carstairs | T | 6 | 665 | 884 | 1,587 | 1,629 | 1,498 |
| Castle Island | SV | 13 | 0 | 0 | 5 | 7 | 7 |
| Castor | T | 7 | 1,025 | 1,166 | 1,123 | 1,030 | 1,030 |
| Cayley | V | 6 | 146 | 122 | 194 | 202 | 216 |
| Cereal | V | 4 | 195 | 220 | 249 | 243 | 251 |
| Champion | V | 5 | 419 | 335 | 339 | 350 | 358 |
| Chauvin | V | 7 | 395 | 349 | 298 | 367 | 400 |
| Chestermere Lake | SV | 6 | 0 | 0 | 487 | 584 | 609 |
| Chipman | V | 10 | 174 | 181 | 266 | 239 | 239 |
| Claresholm | T | 3 | 2,143 | 2,935 | 3,493 | 3,382 | 3,382 |
| Clive | V | 8 | 251 | 247 | 364 | 356 | 356 |
| Cluny | V | 5 | 174 | 86 | 92 | 95 | 94 |
| Clyde | V | 13 | 259 | 233 | 364 | 446 | 428 |
| Coaldale | T | 2 | 2,592 | 2,798 | 4,579 | 4,796 | 4,964 |
| Coalhurst | V | 2 | 0 | 0 | 882 | 1,252 | 1,289 |
| Cochrane | T | 6 | 857 | 1,046 | 3,544 | 4,190 | 4,337 |
| Cold Lake | T | 12 | 1,307 | 1,309 | 2,110 | 3,195 | 3,445 |
| Consort | V | 4 | 557 | 659 | 632 | 674 | 674 |
| Coronation | T | 7 | 864 | 877 | 1,309 | 1,310 | 1,310 |
| Coutts | V | 2 | 469 | 407 | 400 | 359 | 359 |
| Cowley | V | 3 | 127 | 201 | 304 | 290 | 290 |
| Cremona | V | 6 | 221 | 186 | 382 | 356 | 351 |
| Crossfield | T | 6 | 593 | 638 | 1,217 | 1,402 | 1,472 |
| Crowsnest Pass | T | 15 | 0 | 0 | 7,306 | 6,912 | 6,912 |
| Crystal Springs | SV | 11 | 13 | 8 | 29 | 26 | 32 |
| Czar | V | 7 | 196 | 196 | 148 | 178 | 190 |
| Daysland | T | 7 | 539 | 593 | 679 | 678 | 685 |
| Delburne | V | 8 | 450 | 383 | 574 | 577 | 577 |
| Delia | V | 5 | 287 | 241 | 211 | 208 | 223 |
| Derwent | V | 10 | 281 | 203 | 142 | 149 | 149 |
| Devon | T | 11 | 1,418 | 1,468 | 3,885 | 3,691 | 3,752 |
| Dewberry | V | 10 | 179 | 160 | 163 | 214 | 210 |
| Didsbury | T | 6 | 1,254 | 1,821 | 3,095 | 3,184 | 3,184 |
| Donalda | V | 7 | 289 | 232 | 280 | 249 | 236 |
| Donnelly | V | 19 | 289 | 274 | 336 | 405 | 405 |
| Drayton Valley | T | 11 | 3,854 | 3,900 | 5,042 | 5,290 | 5,290 |
| Drumheller | C | 5 | 2,931 | 5,446 | 6,508 | 6,366 | 6,366 |
| Duchess | V | 2 | 218 | 228 | 429 | 430 | 430 |
| Eaglesham | V | 19 | 0 | 229 | 208 | 197 | 191 |
| Eckville | T | 8 | 580 | 660 | 870 | 853 | 869 |
| Edberg | V | 10 | 179 | 145 | 150 | 124 | 129 |
| Edgerton | V | 7 | 295 | 296 | 387 | 400 | 399 |
| Edmonton Beach | SV | 11 | 20 | 148 | 280 | 322 | 322 |
| Edmonton (Proper) | C | 11 | 281,027 | 438,152 | 532,246 | 573,982 | 576,249 |
| Edson | T | 14 | 3,198 | 3,818 | 5,835 | 7,323 | 7,323 |
| Elk Point | T | 12 | 692 | 729 | 1,022 | 1,318 | 1,391 |

## Table 12.3 continued

| | 1986 Status | Census Division | 1961 | 1971 | 1981 | 1986 | 1988 |
|---|---|---|---|---|---|---|---|
| Elnora | V | 8 | 214 | 213 | 249 | 245 | 262 |
| Empress | V | 4 | 405 | 266 | 200 | 229 | 229 |
| Entwistle | V | 11 | 411 | 353 | 462 | 478 | 478 |
| Evansburg | V | 14 | 452 | 528 | 779 | 750 | 750 |
| Fairview | T | 19 | 1,506 | 2,109 | 2,869 | 2,998 | 3,281 |
| Falher | T | 19 | 741 | 918 | 1,102 | 1,178 | 1,178 |
| Ferintosh | V | 10 | 174 | 127 | 155 | 125 | 125 |
| Foremost | V | 1 | 561 | 568 | 568 | 595 | 595 |
| Forestburg | V | 7 | 677 | 669 | 924 | 924 | 936 |
| Fort Assiniboine | V | 13 | 216 | 173 | 207 | 214 | 214 |
| Fort Macleod | T | 3 | 2,490 | 2,715 | 3,139 | 3,123 | 3,123 |
| Fort McMurray | C | 16 | 1,186 | 6,847 | 31,000 | 34,949 | 34,949 |
| Fort Saskatchewan | C | 11 | 2,972 | 5,726 | 12,169 | 11,983 | 11,983 |
| Fox Creek | T | 18 | 0 | 1,625 | 1,978 | 2,068 | 2,068 |
| Gadsby | V | 7 | 98 | 47 | 47 | 35 | 35 |
| Galahad | V | 7 | 231 | 179 | 152 | 190 | 176 |
| Ghost Lake | SV | 15 | 0 | 11 | 42 | 28 | 28 |
| Gibbons | T | 11 | 192 | 551 | 2,276 | 2,335 | 2,491 |
| Girouxville | V | 19 | 318 | 347 | 325 | 367 | 367 |
| Gleichen | T | 5 | 426 | 367 | 381 | 327 | 327 |
| Glendon | V | 12 | 315 | 354 | 430 | 480 | 480 |
| Glenwood | V | 3 | 274 | 200 | 259 | 304 | 309 |
| Golden Days | SV | 11 | 0 | 19 | 30 | 65 | 56 |
| Grand Centre | T | 12 | 1,493 | 2,088 | 3,146 | 3,655 | 3,655 |
| Grande Cache | T | 18 | 0 | 2,525 | 4,523 | 3,646 | 3,646 |
| Grande Prairie | C | 19 | 8,352 | 13,079 | 24,263 | 26,471 | 26,648 |
| Grandview | SV | 11 | 0 | 16 | 31 | 55 | 55 |
| Granum | T | 3 | 290 | 324 | 399 | 352 | 371 |
| Grassy Lake | V | 2 | 274 | 196 | 201 | 235 | 244 |
| Grimshaw | T | 19 | 1,095 | 1,714 | 2,316 | 2,579 | 2,625 |
| Gull Lake | SV | 8 | 40 | 57 | 80 | 102 | 102 |
| Hairy Hill | V | 10 | 173 | 99 | 72 | 73 | 73 |
| Halfmoon Bay | SV | 8 | 0 | 0 | 33 | 43 | 45 |
| Halkirk | V | 7 | 172 | 136 | 156 | 143 | 155 |
| Hanna | T | 4 | 2,645 | 2,545 | 2,806 | 3,017 | 3,017 |
| Hardisty | T | 7 | 582 | 594 | 641 | 642 | 642 |
| Hay Lakes | V | 10 | 233 | 211 | 302 | 294 | 294 |
| Heisler | V | 7 | 214 | 199 | 212 | 213 | 217 |
| High Level | T | 17 | 0 | 1,614 | 2,194 | 3,004 | 3,004 |
| High Prairie | T | 17 | 1,756 | 2,354 | 2,506 | 2,817 | 2,817 |
| High River | T | 6 | 2,276 | 2,676 | 4,792 | 5,096 | 5,096 |
| Hill Spring | V | 13 | 243 | 213 | 200 | 243 | 251 |
| Hines Creek | V | 17 | 398 | 438 | 575 | 513 | 513 |
| Hinton | T | 14 | 3,529 | 4,911 | 8,342 | 8,629 | 8,846 |
| Holden | V | 10 | 556 | 448 | 430 | 411 | 411 |
| Horseshoe Bay | SV | 12 | 0 | 0 | 0 | 14 | 13 |
| Hughenden | V | 7 | 294 | 267 | 267 | 249 | 276 |

## Table 12.3 continued

| | 1986 Status | Census Division | 1961 | 1971 | 1981 | 1986 | 1988 |
|---|---|---|---|---|---|---|---|
| Hussar | V | 5 | 213 | 170 | 175 | 167 | 151 |
| Hythe | V | 19 | 449 | 487 | 639 | 673 | 688 |
| Innisfail | T | 8 | 2,270 | 2,474 | 5,247 | 5,535 | 5,535 |
| Innisfree | V | 10 | 291 | 252 | 255 | 219 | 219 |
| Irma | V | 7 | 425 | 423 | 474 | 484 | 484 |
| Irricana | V | 6 | 167 | 139 | 558 | 669 | 702 |
| Irvine | T | 1 | 240 | 194 | 360 | 301 | 301 |
| Island Lake | SV | 13 | 12 | 20 | 43 | 89 | 126 |
| Island Lake South | SV | 13 | 0 | 0 | 0 | 41 | 62 |
| Itaska Beach | SV | 11 | 2 | 4 | 8 | 4 | 4 |
| Jarvis Bay | SV | 8 | 0 | 0 | 0 | 58 | 55 |
| Kapasiwin | SV | 11 | 2 | 2 | 22 | 2 | 4 |
| Killam | T | 7 | 552 | 851 | 1,005 | 1,032 | 1,032 |
| Kinuso | V | 17 | 323 | 267 | 285 | 282 | 282 |
| Kitscoty | V | 10 | 326 | 320 | 497 | 631 | 626 |
| Lac La Biche | T | 16 | 1,314 | 1,791 | 2,007 | 2,553 | 2,553 |
| Lacombe | T | 8 | 3,029 | 3,436 | 5,591 | 6,080 | 6,110 |
| Lakeview | SV | 11 | 12 | 8 | 13 | 24 | 27 |
| Lamont | T | 10 | 705 | 899 | 1,563 | 1,576 | 1,505 |
| Larkspur | SV | 13 | 0 | 0 | 0 | 9 | 9 |
| Lavoy | V | 10 | 131 | 114 | 122 | 126 | 126 |
| Leduc | C | 11 | 2,356 | 4,000 | 12,471 | 13,126 | 13,126 |
| Legal | V | 11 | 524 | 563 | 1,022 | 881 | 949 |
| Lethbridge | C | 2 | 35,454 | 41,217 | 54,072 | 58,841 | 60,610 |
| Linden | V | 5 | 0 | 226 | 407 | 417 | 417 |
| Lloydminster | C | 10 | 2,944 | 4,738 | 8,997 | 10,201 | 10,201 |
| Lomond | V | 5 | 244 | 165 | 180 | 177 | 177 |
| Longview | V | 6 | 0 | 189 | 301 | 276 | 284 |
| Lougheed | V | 7 | 217 | 217 | 226 | 268 | 279 |
| Ma Me O Beach | SV | 11 | 142 | 89 | 82 | 85 | 85 |
| Magrath | T | 3 | 1,338 | 1,215 | 1,576 | 1,637 | 1,637 |
| Manning | T | 17 | 896 | 1,071 | 1,173 | 1,144 | 1,144 |
| Mannville | V | 10 | 632 | 646 | 788 | 778 | 778 |
| Marwayne | V | 10 | 379 | 351 | 500 | 516 | 516 |
| Mayerthorpe | T | 13 | 663 | 1,036 | 1,475 | 1,414 | 1,414 |
| McLennan | T | 19 | 1,078 | 1,090 | 1,125 | 993 | 1,021 |
| Medicine Hat | C | 1 | 24,484 | 26,518 | 40,380 | 41,804 | 42,290 |
| Mewatha Beach | SV | 13 | 0 | 0 | 27 | 28 | 28 |
| Milk River | T | 2 | 801 | 775 | 894 | 861 | 861 |
| Millet | T | 11 | 403 | 456 | 1,120 | 1,520 | 1,540 |
| Milo | V | 5 | 167 | 117 | 100 | 117 | 114 |
| Minburn | V | 10 | 164 | 106 | 146 | 135 | 135 |
| Mirror | V | 8 | 577 | 365 | 507 | 508 | 508 |
| Morinville | T | 11 | 935 | 1,475 | 4,657 | 5,364 | 5,409 |
| Morrin | V | 5 | 316 | 197 | 244 | 252 | 252 |
| Mundare | T | 10 | 603 | 511 | 604 | 545 | 606 |
| Munson | V | 5 | 82 | 54 | 148 | 152 | 152 |

## Table 12.3 continued

| | 1986 Status | Census Division | 1961 | 1971 | 1981 | 1986 | 1988 |
|---|---|---|---|---|---|---|---|
| Myrnam | V | 10 | 441 | 403 | 397 | 383 | 383 |
| Nakamun Park | SV | 13 | 0 | 3 | 7 | 6 | 10 |
| Nampa | V | 17 | 271 | 283 | 334 | 464 | 464 |
| Nanton | T | 3 | 1,054 | 991 | 1,641 | 1,562 | 1,564 |
| New Norway | V | 10 | 263 | 200 | 291 | 278 | 276 |
| New Sarepta | V | 11 | 184 | 202 | 417 | 314 | 344 |
| Nobleford | V | 2 | 309 | 401 | 534 | 531 | 531 |
| Norglenwold | SV | 8 | 0 | 40 | 86 | 107 | 107 |
| Okotoks | T | 6 | 1,043 | 1,247 | 3,847 | 5,214 | 5,666 |
| Olds | T | 6 | 2,433 | 3,376 | 4,813 | 4,871 | 5,004 |
| Onoway | V | 13 | 302 | 496 | 621 | 639 | 647 |
| Oyen | T | 4 | 780 | 929 | 975 | 979 | 1,010 |
| Paradise Valley | V | 10 | 0 | 144 | 177 | 184 | 163 |
| Parkland Beach | SV | 8 | 0 | 0 | 0 | 48 | 48 |
| Peace River | T | 19 | 2,543 | 5,039 | 5,907 | 6,288 | 6,355 |
| Pelican Narrows | SV | 12 | 0 | 0 | 29 | 55 | 87 |
| Penhold | T | 8 | 319 | 452 | 1,531 | 1,580 | 1,495 |
| Picture Butte | T | 2 | 978 | 1,008 | 1,404 | 1,576 | 1,554 |
| Pincher Creek | T | 3 | 2,961 | 3,227 | 3,757 | 3,800 | 3,800 |
| Plamodon | V | 16 | 0 | 189 | 259 | 236 | 236 |
| Point Alison | SV | 11 | 6 | 10 | 2 | 2 | 2 |
| Ponoka | T | 8 | 3,938 | 4,414 | 5,221 | 5,473 | 5,473 |
| Poplar Bay | SV | 11 | 0 | 0 | 28 | 43 | 43 |
| Provost | T | 7 | 1,022 | 1,489 | 1,645 | 1,725 | 1,725 |
| Radway | V | 13 | 183 | 170 | 192 | 162 | 200 |
| Rainbow Lake | T | 17 | 0 | 355 | 504 | 675 | 1,146 |
| Raymond | T | 2 | 2,362 | 2,156 | 2,837 | 2,957 | 2,957 |
| Red Deer | C | 8 | 19,612 | 27,674 | 46,393 | 54,425 | 54,839 |
| Red Cliff | T | 1 | 2,221 | 2,255 | 3,876 | 3,834 | 3,834 |
| Redwater | T | 11 | 1,135 | 1,287 | 1,932 | 1,982 | 2,024 |
| Rimbey | T | 8 | 1,266 | 1,450 | 1,685 | 1,786 | 1,748 |
| Rochon Sands | SV | 7 | 28 | 20 | 39 | 31 | 32 |
| Rocky Mountain House | T | 9 | 2,360 | 2,968 | 4,698 | 5,182 | 5,261 |
| Rockyford | V | 5 | 288 | 286 | 329 | 293 | 293 |
| Rosalind | V | 10 | 0 | 203 | 197 | 214 | 214 |
| Rosemary | V | 2 | 210 | 208 | 328 | 321 | 321 |
| Ross Haven | SV | 13 | 0 | 21 | 59 | 73 | 73 |
| Rumsey | V | 5 | 123 | 95 | 87 | 70 | 70 |
| Rycroft | V | 19 | 500 | 461 | 649 | 672 | 672 |
| Ryley | V | 10 | 469 | 428 | 483 | 500 | 500 |
| Sandy Beach | SV | 13 | 4 | 22 | 78 | 92 | 110 |
| Sangudo | V | 13 | 325 | 360 | 398 | 391 | 368 |
| Seba Beach | SV | 11 | 113 | 165 | 126 | 122 | 96 |
| Sedgewick | T | 7 | 655 | 730 | 879 | 877 | 877 |
| Sexsmith | T | 19 | 531 | 559 | 1,180 | 1,256 | 1,256 |
| Silver Beach | SV | 11 | 14 | 27 | 19 | 25 | 25 |
| Silver Sands | SV | 13 | 0 | 2 | 58 | 67 | 67 |

## Table 12.3 continued

| | 1986 Status | Census Division | 1961 | 1971 | 1981 | 1986 | 1988 |
|---|---|---|---|---|---|---|---|
| Slave Lake | T | 17 | 468 | 2,052 | 4,506 | 5,429 | 5,611 |
| Smoky Lake | T | 12 | 626 | 881 | 1,074 | 1,036 | 1,045 |
| South Baptiste | SV | 13 | 0 | 0 | 0 | 66 | 68 |
| South View | SV | 13 | 0 | 19 | 35 | 44 | 44 |
| Spirit River | T | 19 | 890 | 1,091 | 1,104 | 1,086 | 1,086 |
| Spruce Grove | C | 11 | 465 | 3,029 | 10,326 | 11,918 | 11,918 |
| St Paul | T | 12 | 2,823 | 4,161 | 4,884 | 5,030 | 5,128 |
| Standard | V | 5 | 266 | 267 | 379 | 331 | 336 |
| Stavely | T | 3 | 349 | 351 | 504 | 454 | 469 |
| Stettler | T | 7 | 3,638 | 4,168 | 5,136 | 5,147 | 5,147 |
| Stirling | V | 2 | 468 | 436 | 688 | 796 | 796 |
| Stony Plain | T | 11 | 1,311 | 1,770 | 4,839 | 5,802 | 6,062 |
| Strathmore | T | 5 | 924 | 1,148 | 2,986 | 3,544 | 3,544 |
| Strome | V | 7 | 311 | 226 | 281 | 267 | 267 |
| St. Albert | C | 11 | 4,059 | 11,800 | 31,996 | 36,710 | 38,318 |
| Sundance Beach | SV | 11 | 0 | 5 | 11 | 11 | 11 |
| Sundre | T | 6 | 853 | 933 | 1,742 | 1,712 | 1,732 |
| Sunset Beach | SV | 13 | 0 | 0 | 22 | 38 | 38 |
| Sunset Point | SV | 13 | 14 | 26 | 51 | 80 | 103 |
| Swan Hills | T | 17 | 643 | 1,376 | 2,497 | 2,403 | 2,407 |
| Sylvan Lake | T | 8 | 1,381 | 1,597 | 3,779 | 3,937 | 3,937 |
| Taber | T | 2 | 3,951 | 4,765 | 5,988 | 6,382 | 6,382 |
| Thorhild | V | 13 | 312 | 509 | 576 | 481 | 481 |
| Thorsby | V | 11 | 491 | 595 | 737 | 632 | 632 |
| Three Hills | T | 5 | 1,491 | 1,354 | 1,787 | 2,528 | 3,324 |
| Tilley | V | 2 | 257 | 270 | 345 | 362 | 362 |
| Tofield | T | 10 | 905 | 924 | 1,504 | 1,483 | 1,483 |
| Torrington | V | 5 | 0 | 118 | 189 | 209 | 209 |
| Trochu | T | 5 | 671 | 739 | 880 | 892 | 892 |
| Turner Valley | T | 6 | 702 | 766 | 1,311 | 1,271 | 1,298 |
| Two Hills | T | 10 | 826 | 979 | 1,193 | 1,127 | 1,141 |
| Val Quentin | V | 13 | 0 | 41 | 99 | 78 | 78 |
| Valleyview | T | 18 | 1,077 | 1,708 | 2,061 | 1,987 | 2,218 |
| Vauxhall | T | 2 | 942 | 1,016 | 1,049 | 991 | 984 |
| Vegreville | T | 10 | 2,908 | 3,691 | 5,251 | 5,276 | 5,276 |
| Vermilion | T | 10 | 2,449 | 2,915 | 3,766 | 3,879 | 4,259 |
| Veteran | V | 4 | 239 | 267 | 314 | 312 | 312 |
| Viking | T | 10 | 1,043 | 1,178 | 1,232 | 1,160 | 1,160 |
| Vilna | V | 12 | 400 | 303 | 345 | 325 | 325 |
| Vulcan | T | 5 | 1,310 | 1,384 | 1,489 | 1,420 | 1,422 |
| Wabamun | V | 11 | 0 | 0 | 662 | 585 | 589 |
| Wainwright | T | 7 | 3,351 | 3,872 | 4,266 | 4,665 | 4,665 |
| Waiparous | SV | 15 | 0 | 0 | 0 | 16 | 16 |
| Wanham | V | 19 | 251 | 268 | 266 | 233 | 238 |
| Warburg | V | 11 | 285 | 464 | 501 | 477 | 477 |
| Warner | V | 2 | 472 | 408 | 477 | 435 | 490 |
| Warspite | V | 12 | 153 | 110 | 96 | 97 | 97 |

## Table 12.3 continued

| | 1986 Status | Census Division | 1961 | 1971 | 1981 | 1986 | 1988 |
|---|---|---|---|---|---|---|---|
| Waskatenau | V | 12 | 305 | 233 | 290 | 276 | 276 |
| Wembley | T | 19 | 303 | 348 | 1,169 | 1,208 | 1,227 |
| West Baptiste | SV | 13 | 0 | 0 | 0 | 19 | 22 |
| West Cove | SV | 13 | 0 | 9 | 49 | 48 | 48 |
| Westlock | T | 13 | 1,838 | 3,246 | 4,424 | 4,532 | 4,463 |
| Wetaskiwin | C | 11 | 5,300 | 6,267 | 9,597 | 10,071 | 10,103 |
| Whispering Hills | SV | 13 | 0 | 0 | 0 | 18 | 26 |
| White Gull | SV | 13 | 0 | 0 | 0 | 7 | 15 |
| White Sands | SV | 7 | 0 | 0 | 2 | 2 | 2 |
| Whitecourt | T | 13 | 1,054 | 3,202 | 5,585 | 5,737 | 6,126 |
| Wildwood | V | 14 | 479 | 386 | 441 | 377 | 361 |
| Willingdon | V | 10 | 429 | 325 | 366 | 371 | 371 |
| Yellowstone | SV | 13 | 0 | 14 | 68 | 74 | 94 |
| Youngstown | V | 4 | 321 | 305 | 297 | 294 | 294 |

Source: 1961-1986 Figures - Statistics Canada 1986 Census of Canada; 1988 Figures Alberta Municipal Affairs

## Population by Mother Tongue for Census Divisions, Alberta, 1986

| Census Division | English | French | Aboriginal Languages | Italian | German | Dutch | Ukrainian | Polish | Chinese | Other | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 46,850 | 460 | 15 | 105 | 4,995 | 455 | 290 | 130 | 280 | 3,010 | **56,590** |
| 2 | 94,690 | 810 | 245 | 485 | 6,130 | 2,690 | 970 | 705 | 855 | 8,160 | **115,740** |
| 3 | 28,450 | 195 | 880 | 30 | 2,205 | 475 | 110 | 50 | 110 | 2,465 | **34,970** |
| 4 | 10,765 | 50 | 0 | 5 | 965 | 20 | 105 | 60 | 20 | 390 | **12,380** |
| 5 | 33,145 | 275 | 470 | 60 | 2,535 | 345 | 245 | 65 | 110 | 1,555 | **38,805** |
| 6 | 591,220 | 9,510 | 940 | 5,650 | 16,760 | 5,290 | 5,200 | 3,550 | 16,260 | 61,225 | **715,605** |
| 7 | 36,590 | 380 | 5 | 20 | 1,625 | 110 | 295 | 75 | 90 | 1,495 | **40,685** |
| 8 | 105,550 | 1,170 | 155 | 105 | 2,380 | 1,135 | 615 | 240 | 630 | 4,630 | **116,610** |
| 9 | 14,255 | 135 | 310 | 15 | 200 | 205 | 65 | 45 | 20 | 750 | **16,000** |
| 10 | 63,220 | 730 | 250 | 25 | 2,575 | 265 | 6,985 | 395 | 195 | 5,105 | **79,745** |
| 11 | 630,100 | 18,810 | 2,305 | 5,985 | 23,780 | 6,095 | 24,480 | 6,140 | 16,035 | 73,775 | **807,505** |
| 12 | 30,595 | 4,755 | 1,475 | 20 | 540 | 75 | 3,125 | 325 | 85 | 2,915 | **43,910** |
| 13 | 45,020 | 1,275 | 245 | 40 | 2,330 | 440 | 2,375 | 445 | 60 | 2,745 | **54,975** |
| 14 | 21,920 | 660 | 220 | 50 | 590 | 170 | 510 | 80 | 75 | 1,035 | **25,310** |
| 15 | 19,240 | 655 | 15 | 285 | 505 | 145 | 205 | 200 | 55 | 1,490 | **22,795** |
| 16 | 39,590 | 2,075 | 1,655 | 75 | 345 | 150 | 640 | 120 | 350 | 3,775 | **48,775** |
| 17 | 31,625 | 1,100 | 6,645 | 15 | 5,110 | 280 | 745 | 130 | 75 | 3,125 | **48,850** |
| 18 | 11,425 | 295 | 525 | 15 | 450 | 60 | 120 | 25 | 25 | 650 | **13,590** |
| 19 | 60,190 | 4,720 | 465 | 70 | 1,695 | 380 | 1,265 | 315 | 340 | 3,560 | **73,000** |

Source: Statistics Canada Census of Canada 1986

## Population by Ethnic Origin for Census Divisions, Alberta, 1986

| Census Division | TOTAL | British[1] | French[2] | Aboriginal Peoples[3] | Black[4] | Chinese | Dutch | German |
|---|---|---|---|---|---|---|---|---|
| 1 | **55,910** | 12,995 | 1,020 | 250 | 10 | 375 | 1,150 | 13,596 |
| 2 | **114,380** | 28,695 | 1,785 | 1,265 | 70 | 1,040 | 6,865 | 12,755 |
| 3 | **34,330** | 9,755 | 485 | 4,285 | 0 | 180 | 1,285 | 3,235 |
| 4 | **12,165** | 3,700 | 185 | 35 | 0 | 15 | 95 | 2,315 |
| 5 | **38,015** | 10,645 | 775 | 2,390 | 10 | 190 | 1,140 | 5,155 |
| 6 | **709,795** | 201,745 | 16,670 | 4,490 | 2,890 | 22,855 | 14,325 | 43,835 |
| 7 | **40,095** | 12,345 | 1,125 | 95 | 10 | 155 | 445 | 5,385 |
| 8 | **113,515** | 35,640 | 2,710 | 685 | 250 | 785 | 3,515 | 8,625 |
| 9 | **15,915** | 5,085 | 280 | 785 | 5 | 5 | 590 | 975 |
| 10 | **78,135** | 17,465 | 1,605 | 880 | 10 | 190 | 1,055 | 7,385 |
| 11 | **799,625** | 178,280 | 29,845 | 11,870 | 4,285 | 21,705 | 17,505 | 56,935 |
| 12 | **43,465** | 7,485 | 5,560 | 3,675 | 15 | 70 | 370 | 1,545 |
| 13 | **54,230** | 13,145 | 2,130 | 1,380 | 50 | 150 | 1,865 | 5,510 |
| 14 | **25,185** | 6,880 | 1,090 | 825 | 35 | 120 | 620 | 1,865 |
| 15 | **22,620** | 6,050 | 845 | 55 | 10 | 75 | 400 | 1,065 |
| 16 | **48,675** | 13,130 | 2,935 | 5,135 | 220 | 640 | 390 | 1,420 |
| 17 | **48,705** | 7,820 | 1,785 | 10,585 | 30 | 40 | 2,615 | 4,685 |
| 18 | **13,930** | 3,575 | 515 | 1,130 | 10 | 20 | 265 | 1,130 |
| 19 | **72,110** | 17,910 | 6,235 | 1,860 | 70 | 590 | 1,415 | 5,455 |

## Table 12.5 continued

| Census Division | Italian | Jewish | Polish | Scandinavian[5] | South Asian[6] | Ukrainian | Other Single | Multiple[7] Origins |
|---|---|---|---|---|---|---|---|---|
| 1 | 220 | 45 | 530 | 905 | 110 | 880 | 1,690 | 22,135 |
| 2 | 935 | 105 | 1,475 | 2,705 | 105 | 2,525 | 8,860 | 45,190 |
| 3 | 85 | 0 | 135 | 770 | 15 | 325 | 910 | 12,865 |
| 4 | 5 | 0 | 120 | 310 | 30 | 295 | 105 | 4,960 |
| 5 | 140 | 20 | 225 | 1,315 | 90 | 675 | 875 | 14,375 |
| 6 | 10,705 | 4,420 | 7,100 | 11,655 | 13,780 | 14,295 | 47,920 | 293,105 |
| 7 | 50 | 5 | 285 | 1,505 | 90 | 650 | 925 | 17,020 |
| 8 | 265 | 70 | 700 | 3,425 | 430 | 2,165 | 4,290 | 49,965 |
| 9 | 65 | 5 | 185 | 465 | 5 | 210 | 700 | 6,550 |
| 10 | 55 | 10 | 1,265 | 3,855 | 240 | 11,285 | 1,865 | 30,980 |
| 11 | 9,880 | 3,095 | 12,535 | 13,525 | 13,965 | 56,095 | 50,300 | 319,810 |
| 12 | 60 | 0 | 745 | 575 | 75 | 5,490 | 895 | 16,905 |
| 13 | 105 | 25 | 1,020 | 990 | 70 | 4,225 | 1,465 | 22,100 |
| 14 | 80 | 0 | 275 | 610 | 5 | 1,050 | 660 | 11,075 |
| 15 | 540 | 50 | 445 | 375 | 160 | 520 | 1,555 | 10,470 |
| 16 | 135 | 45 | 270 | 430 | 470 | 1,580 | 2,685 | 19,180 |
| 17 | 75 | 25 | 345 | 770 | 100 | 1,710 | 955 | 17,170 |
| 18 | 25 | 0 | 85 | 325 | 65 | 260 | 455 | 5,530 |
| 19 | 205 | 30 | 775 | 2,005 | 295 | 2,535 | 1,790 | 30,945 |

Source Statistics Canada, Census of Canada, 1986

See Footnotes page 176

## Population, Births, Marriages, Deaths, and Rates, Alberta, 1951-1988

| | Population As On 1-June | Births | Birth Rate Per 1,000 Population | No. Of Marriages | Marriages Per 1,000 Population | No. Of Deaths | Death Rate Per 1,000 Population | Rate of Natural Increase Per 1,000 Population |
|---|---|---|---|---|---|---|---|---|
| 1951 | 939,500 | 27,003 | 28.7 | 9,305 | 9.9 | 7,167 | 7.6 | 21.1 |
| 1961 | 1,332,000 | 38,914 | 29.2 | 10,474 | 7.9 | 8,863 | 6.7 | 22.6 |
| 1971 | 1,627,900 | 30,545 | 18.8 | 15,614 | 9.6 | 10,525 | 6.5 | 12.3 |
| 1976 | 1,838,000 | 33,063 | 18.0 | 17,752 | 9.7 | 11,584 | 6.3 | 11.7 |
| 1981 | 2,237,300 | 42,638 | 19.1 | 21,781 | 9.7 | 12,823 | 5.7 | 13.3 |
| 1982 | 2,314,500 | 45,036 | 19.5 | 22,312 | 9.6 | 12,968 | 5.6 | 13.9 |
| 1983 | 2,338,700 | 45,555 | 19.5 | 21,172 | 9.1 | 12,588 | 5.4 | 14.1 |
| 1984 | 2,338,500 | 44,105 | 18.9 | 20,052 | 8.6 | 12,730 | 5.4 | 13.4 |
| 1985 | 2,348,500 | 46,260 | 19.7 | 20,790 | 8.9 | 13,140 | 5.6 | 14.1 |
| 1986 | 2,375,100 | 44,010 | 18.5 | 20,430 | 8.6 | 13,690 | 5.8 | 12.8 |
| 1987 | 2,377,700 | 43,060 | 18.1 | 18,500 | 7.8 | 13,630 | 5.7 | 12.4 |
| 1988* | 2,395,200 | 43,280 | 18.1 | 20,110 | 8.4 | 13,720 | 5.7 | 12.3 |

* Preliminary

Source: Statistics Canada, Vital Statistics, Cat. No. 84-[illegible]

## Migration of Persons Between Alberta and Other Provinces, 1976-1988

**From Alberta to:**

| | Newfoundland | Prince Edward Island | Nova Scotia | New Brunswick | Quebec | Ontario | Manitoba | Saskatchewan | British Columbia | N.W.T. & Yukon | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1976 | 595 | 375 | 2,055 | 1,515 | 2,470 | 15,480 | 7,305 | 15,050 | 31,210 | 2,615 | **78,670** |
| 1977 | 870 | 585 | 2,595 | 1,495 | 2,455 | 19,345 | 8,075 | 15,465 | 35,025 | 2,640 | **88,550** |
| 1978 | 1,175 | 480 | 2,555 | 1,705 | 2,685 | 18,665 | 7,605 | 14,075 | 39,625 | 2,315 | **90,885** |
| 1979 | 1,490 | 415 | 2,465 | 1,770 | 2,550 | 18,240 | 6,640 | 13,715 | 42,145 | 2,455 | **91,885** |
| 1980 | 1,560 | 490 | 2,970 | 1,890 | 2,920 | 17,325 | 6,280 | 11,835 | 41,120 | 1,865 | **88,255** |
| 1981 | 1,630 | 400 | 3,030 | 2,040 | 2,870 | 18,500 | 6,270 | 10,550 | 35,870 | 1,740 | **82,900** |
| 1982 | 2,690 | 720 | 3,750 | 2,810 | 3,700 | 21,410 | 5,940 | 9,040 | 19,090 | 1,250 | **70,400** |
| 1983 | 1,960 | 770 | 4,000 | 2,700 | 4,730 | 22,790 | 5,260 | 8,890 | 21,880 | 1,320 | **74,300** |
| 1984 | 1,520 | 650 | 4,060 | 2,160 | 5,090 | 32,550 | 6,040 | 10,230 | 25,390 | 1,810 | **89,500** |
| 1985 | 1,530 | 480 | 2,990 | 1,680 | 3,840 | 30,060 | 5,650 | 9,430 | 26,410 | 1,830 | **83,900** |
| 1986 | 1,660 | 300 | 2,100 | 1,250 | 3,010 | 28,050 | 4,240 | 7,960 | 24,140 | 1,480 | **74,190** |
| 1987 | 1,090 | 320 | 2,490 | 1,430 | 3,080 | 27,870 | 4,750 | 7,050 | 31,530 | 1,840 | **81,450** |
| 1988 | 1,110 | 500 | 2,020 | 1,330 | 2,200 | 19,410 | 4,010 | 6,230 | 31,370 | 1,640 | **69,820** |

## Table 12.7 continued

To Alberta from:

| | Newfoundland | Prince Edward Island | Nova Scotia | New Brunswick | Quebec | Ontario | Manitoba | Saskatchewan | British Columbia | N.W.T. & Yukon | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1976 | 1,380 | 590 | 3,285 | 2,040 | 6,580 | 29,135 | 11,950 | 14,850 | 43,750 | 3,555 | **117,015** |
| 1977 | 2,755 | 585 | 4,620 | 2,420 | 11,510 | 34,235 | 12,650 | 16,175 | 37,800 | 3,470 | **126,220** |
| 1978 | 3,650 | 615 | 4,055 | 3,010 | 9,710 | 36,270 | 14,650 | 17,430 | 37,620 | 4,015 | **131,025** |
| 1979 | 2,915 | 570 | 4,505 | 3,410 | 9,570 | 44,065 | 17,205 | 16,640 | 34,990 | 3,905 | **137,775** |
| 1980 | 3,180 | 985 | 5,260 | 4,350 | 10,150 | 54,055 | 15,025 | 15,675 | 26,835 | 2,820 | **138,335** |
| 1981 | 5,250 | 1,290 | 5,960 | 5,750 | 10,230 | 46,080 | 10,510 | 13,640 | 24,860 | 2,130 | **125,700** |
| 1982 | 2,340 | 740 | 3,030 | 1,830 | 7,600 | 20,970 | 4,970 | 8,100 | 20,040 | 1,380 | **71,000** |
| 1983 | 1,090 | 360 | 1,400 | 950 | 3,400 | 12,110 | 3,730 | 5,900 | 14,480 | 1,180 | **44,600** |
| 1984 | 1,310 | 290 | 1,810 | 1,350 | 2,320 | 13,240 | 4,360 | 8,450 | 19,350 | 1,820 | **54,300** |
| 1985 | 1,940 | 420 | 2,890 | 1,560 | 2,430 | 14,430 | 5,340 | 12,350 | 28,450 | 2,380 | **70,900** |
| 1986 | 1,120 | 260 | 2,100 | 1,180 | 1,680 | 10,950 | 3,880 | 9,630 | 20,490 | 1,710 | **52,990** |
| 1987 | 1,100 | 340 | 1,830 | 1,350 | 2,320 | 13,880 | 4,980 | 10,950 | 19,250 | 1,820 | **57,820** |
| 1988 | 1,320 | 280 | 1,940 | 1,480 | 2,750 | 16,430 | 6,150 | 14,040 | 20,970 | 1,950 | **67,310** |

Source: Alberta Bureau of Statistics

## Components of International and Interprovincial Migration, Alberta, 1976-1988

### Table 12.8

| | International Migration | | | Interprovincial Migration | | | TOTAL NET MIGRATION |
|---|---|---|---|---|---|---|---|
| | Immigration | Emigration | Net | In | Out | Net | |
| 1976 | 14,895 | 1,495 | 13,400 | 117,015 | 78,670 | 38,345 | **51,745** |
| 1977 | 12,695 | 1,520 | 11,175 | 126,220 | 88,550 | 37,670 | **48,845** |
| 1978 | 9,825 | 1,520 | 8,305 | 131,025 | 90,885 | 40,140 | **48,445** |
| 1979 | 12,760 | 1,520 | 11,240 | 137,775 | 91,885 | 45,890 | **57,130** |
| 1980 | 18,775 | 2,315 | 16,460 | 138,335 | 88,255 | 50,080 | **66,540** |
| 1981 | 19,900 | 5,900 | 14,000 | 125,700 | 82,900 | 42,800 | **56,800** |
| 1982 | 17,900 | 7,900 | 10,000 | 71,000 | 70,400 | 600 | **10,600** |
| 1983 | 10,700 | 7,900 | 2,800 | 44,600 | 74,300 | -29,700 | **-26,900** |
| 1984 | 10,800 | 5,700 | 5,100 | 54,300 | 89,500 | -35,200 | **-30,100** |
| 1985 | 8,900 | 6,700 | 2,200 | 70,900 | 83,900 | -13,000 | **-10,800** |
| 1986 | 9,590 | 7,280 | 2,310 | 52,990 | 74,190 | -21,200 | **-18,890** |
| 1987 | 12,000 | 6,270 | 5,730 | 57,820 | 81,450 | -23,630 | **-17,900** |
| 1988 | 13,800 | 5,790 | 8,010 | 67,310 | 69,820 | -2,510 | **5,500** |

Source: Alberta Bureau of Statistics

## Population* of Working Age, In and Not In Labour Force, Employed and Unemployed, and Participation Rates - Male and Female, Alberta, 1976-1988

| | **1976** | **1981** | **1984** | **1985** | **1986** | **1987** | **1988** |
|---|---|---|---|---|---|---|---|
| Population 15 Years+ | | | | | | | |
| Male | 656 | 842 | 868 | 870 | 877 | 878 | 885 |
| Female | 647 | 814 | 858 | 866 | 878 | 884 | 895 |
| Total | 1,304 | 1,656 | 1,725 | 1,736 | 1,755 | 1,763 | 1,781 |
| Labour Force | | | | | | | |
| Male | 545 | 717 | 718 | 717 | 717 | 712 | 717 |
| Female | 328 | 480 | 524 | 532 | 548 | 556 | 572 |
| Total | 873 | 1,197 | 1,241 | 1,248 | 1,266 | 1,268 | 1,289 |
| Not In Labour Force | | | | | | | |
| Male | 112 | 125 | 150 | 153 | 159 | 166 | 168 |
| Female | 319 | 334 | 334 | 334 | 330 | 328 | 324 |
| Total | 431 | 459 | 484 | 487 | 488 | 494 | 491 |
| Employed | | | | | | | |
| Male | 526 | 692 | 635 | 645 | 643 | 644 | 662 |
| Female | 312 | 459 | 469 | 478 | 499 | 503 | 524 |
| Total | 838 | 1,151 | 1,104 | 1,124 | 1,142 | 1,146 | 1,186 |
| Unemployed | | | | | | | |
| Male | 19 | 25 | 83 | 71 | 74 | 69 | 55 |
| Female | 16 | 21 | 55 | 54 | 50 | 53 | 48 |
| Total | 35 | 46 | 138 | 125 | 124 | 122 | 103 |
| Unemployement Rate (%) | | | | | | | |
| Male | 3.4 | 3.5 | 11.5 | 10.0 | 10.4 | 9.7 | 7.7 |
| Female | 4.8 | 4.3 | 10.5 | 10.1 | 9.1 | 9.5 | 8.3 |
| Total | 4.0 | 3.8 | 11.1 | 10.0 | 9.8 | 9.6 | 8.0 |
| Participation Rate (%) | | | | | | | |
| Male | 83.0 | 85.1 | 82.7 | 82.4 | 81.9 | 81.1 | 81.0 |
| Female | 50.7 | 58.9 | 61.1 | 61.4 | 62.5 | 62.9 | 63.9 |
| Total | 67.0 | 72.3 | 71.9 | 71.9 | 72.2 | 72.0 | 72.4 |

* Figures May Not Add Due to Rounding

Source: Statistics Canada Cat. No. 71-001

## Employed Labour Force by Industry, Annual Averages, Alberta, 1986*, 1987*, 1988* (Thousands)

| | **1986** | **1987** | **1988** |
|---|---|---|---|
| Industries | | | |
| Agriculture | 83 | 87 | 94 |
| Other Primary | 71 | 66 | 70 |
| Manufacturing | 87 | 85 | 95 |
| Construction | 67 | 71 | 73 |
| Transportation, Communications and other Utilities | 93 | 89 | 93 |
| Trade | 216 | 208 | 214 |
| Finance, Insurance, Real Estate | 58 | 58 | 60 |
| Services | 383 | 399 | 402 |
| Public Administration | 84 | 83 | 87 |
| **TOTAL**** | **1,142** | **1,147** | **1,187** |

Note: *Preliminary, subject to adjustment. Final estimates will be published in Statistics Canada publication #71-529.

** Some totals do not add up due to rounding

Source Statistics Canada Labour Force Survey

## Employed Labour Force by Occupation, Annual Averages, Alberta, 1986*, 1987*, 1988* (Thousands)

| | **1986** | **1987** | **1988** |
|---|---|---|---|
| Occupational Group | | | |
| Managerial Professional | 350 | 356 | 365 |
| Clerical | 185 | 183 | 190 |
| Sales | 111 | 111 | 114 |
| Service | 153 | 149 | 156 |
| Primary | 100 | 99 | 110 |
| Processing | 99 | 96 | 99 |
| Construction | 67 | 72 | 73 |
| Transportation | 45 | 45 | 47 |
| Materials Handling/Other Crafts | 32 | 35 | 34 |
| **ALL OCCUPATIONS**** | **1,142** | **1,147** | **1,187** |

Note: *Preliminary, subject to adjustment. Final estimates will be published in Statistics Canada publication #71-529

** Some totals do not add up due to rounding

Source Statistics Canada Labour Force Survey

## Apprentices Registered and Certified, Educational Requirements and Length of Apprenticeship Training Period, Alberta, 1988

| | Registered Apprentices | Completed Apprentices | Journeyman Certificates Issued | Minimum Education Grade | Length of Apprenticeship Year or Period |
|---|---|---|---|---|---|
| Agricultural Mechanic | 51 | 20 | 26 | 9 | 2 |
| Appliance Serviceman | 66 | 14 | 22 | 10 | 3 |
| Auto Body Mechanic | 972 | 143 | 172 | 9 | 3 |
| Baker | 200 | 41 | 61 | 9 | 3 |
| Barber | 14 | 10 | 26 | 10 | 2 |
| Beautician | 1,211 | 496 | 568 | 10 | 2 |
| Boilermaker | 60 | 15 | 20 | Com. Ent. | 3 |
| Bricklayer | 97 | 10 | 12 | 9 | 3 |
| Cabinetmaker | 354 | 29 | 31 | 9 | 4 |
| Carpenter | 1,456 | 187 | 247 | 9 | 4 |
| Cement Finisher | 23 | 3 | 6 | 9 | 3 |
| Communication Electrician | 36 | 17 | 28 | 11 | 4 |
| Cook | 995 | 157 | 329 | 9 | 3 |
| Electrical Rewind Mechanic | 34 | 6 | 9 | 10 | 4 |
| Electrician | 2 207 | 286 | 342 | Com. Ent. | 4 |
| Electronic Technician | 159 | 28 | 44 | 10 | 4 |
| Elevator Constructor | — | — | 1 | | |
| Floor Covering Mechanic | 67 | 5 | 8 | 9 | 2 |
| Gasfitter | 102 | 31 | 263 | 9 | 3 |
| Glassworker | 160 | 9 | 12 | 9 | 4 |
| Heavy Duty Mechanic | 1,400 | 255 | 348 | 9 | 4 |
| Heavy Equipment Operator | 26 | 12 | 60 | 9 | 3 |
| Instrument Mechanic | 524 | 125 | 173 | Com. Ent. | 4 |
| Insulator | 198 | 62 | 68 | 9 | 4 |
| Ironworker | 46 | 10 | 14 | Com. Ent. | 3 |
| Landscape Gardener | 293 | 21 | 34 | 9 | 4 |
| Lather-Interior Systems Mechanic | 45 | 8 | 9 | 9 | 3 |
| Machinist | 459 | 61 | 90 | 9 | 4 |
| Millwright | 527 | 109 | 204 | 10 | 4 |
| Motorcycle Mechanic | 78 | 5 | 26 | 9 | 4 |
| Motor Mechanic | 2 655 | 331 | 447 | 9 | 4 |
| Painter and Decorator | 146 | 33 | 57 | 9 | 3 |
| Partsman | 706 | 121 | 202 | 10 | 3 |
| Plasterer | – | – | | | |
| Plumber | 803 | 167 | 176 | Com. Ent. | 4 |
| Power Lineman | 128 | 19 | | | |
| Sprinkler Systems Installer | 77 | 11 | 11 | Com. Ent. | 4 |
| Steamfitter - Pipefitter | 280 | 29 | 94 | Com. Ent. | 4 |
| Steel Fabricator | 53 | 8 | 23 | 9 | 3 |
| Tilesetter | 60 | 3 | 5 | 9 | 3 |
| Tool and Die Maker | | | 3 | | |
| Transport Refrigeration Mechanic | 24 | 4 | 4 | 9 | 3 |
| Water Well Driller | 49 | 12 | 18 | 9 | |
| Welder | 1,517 | 372 | 477 | 9 | |
| **TOTALS** | **19.631** | **3,471** | **5.048** | | |

[illegible]

## Apprentices Registered, Attending School, Receiving Certification, and Examinations Written, Alberta, 1986-1988

| **Apprentices** | **1986** | **1987** | **1988** |
|---|---|---|---|
| Registered | 18,693 | 18,703 | 19,631 |
| Attending School in Block of Formal Training | 12,174 | 11,629 | 10,769 |
| Certificates Issued: | | | |
| a) Indicating Completion of Apprenticeship | 4,898 | 3,788 | 3,471 |
| b) Indicating Permanent Journeyman Status | 9,684 | 6,002 | 5,048 |
| Examinations Written | 35,376 | 28,850 | 26,919 |

Source: Alberta Career Development & Employment

## Enrolment, Number of Schools, School Rooms and Teachers in the Alberta Public School System, 1975/76-1987/88

| Year | Enrolment in Public & Separate Schools | Operating Schools | School Rooms | Teachers | Student/Teacher Ratio |
|---|---|---|---|---|---|
| 1975-76 | 421,785 | 1,421 | 17,478 | 23,131 | 19.0 |
| 1976-77 | 423,314 | 1,429 | 18,190 | 23,749 | 18.7 |
| 1977-78 | 421,833 | 1,467 | 18,725 | 23,876 | 18.5 |
| 1978-79 | 418,715 | 1,515 | 19,307 | 23,867 | 18.4 |
| 1979-80 | 415,595 | 1,558 | 19,754 | 24,073 | 18.2 |
| 1980-81 | 417,016 | 1,596 | 18,974 | 24,601 | 17.9 |
| 1981-82 | 419,822 | 1,694 | 22,039 | 25,016 | 18.2 |
| 1982-83 | 423,690 | 1,716 | 24,569 | 26,222 | 17.3 |
| 1983-84 | 422,764 | 1,720 | 25,435 | 26,668 | 17.0 |
| 1984-85 | 420,632 | 1,691 | 27,226 | 27,093 | 16.7 |
| 1985-86 | 421,252 | 1,703 | N/A | 27,306 | 16.7 |
| 1986-87 | 423,372 | 1,700 | N/A | 27,260 | 16.8 |
| 1987-88 | 423,900 | 1,698 | N/A | 27,136 | 17.0 |

Source: Alberta Education

## Enrolment in the Alberta Post-Secondary System, 1977/78-1987/88

| Year | U of A Calgary & Lethbridge | Athabasca University & Centre | Public Colleges | Private Colleges | Technical Institutes | Vocational Centres & The Alberta Petroleum Industry Training Centre | Schools of Nursing |
|---|---|---|---|---|---|---|---|
| 1977-78 | 31,827 | 5,024 | 9,729 | 663 | 9,483 | 8,891 | 1,077 |
| 1978-79 | 30,847 | 6,306 | 9,385 | 656 | 9,900 | 9,776 | 1,084 |
| 1979-80 | 30,274 | 7,052 | 9,231 | 790 | 9,909 | 9,587 | 1,062 |
| 1980-81 | 30,852 | 5,623 | 9,940 | 734 | 10,165 | 10,637 | 1,172 |
| 1981-82 | 33,448 | 6,663 | 10,826 | 797 | 10,334 | 10,359 | 1,205 |
| 1982-83 | 36,679 | 8,177 | 12,895 | 1,041 | 11,310 | 12,848 | 1,297 |
| 1983-84 | 39,907 | 8,322 | 14,789 | 1,153 | 11,476 | 15,769 | 1,438 |
| 1984-85 | 41,423 | 9,723 | 16,339 | 1,180 | 11,582 | 18,057 | 1,523 |
| 1985-86 | 41,932 | 10,913 | 17,490 | 1,487 | 11,302 | 19,540 | 1,562 |
| 1986-87 | 43,207 | 12,082 | 18,003 | 1,662 | 11,798 | 20,642 | 1,589 |
| 1987-88 | 44,751 | 11,573 | 18,640 | 1,856 | 12,135 | 17,500 | 1,525 |

Source: Alberta Advanced Education

# EXPORTS

## Alberta Merchandise Exports by Region, 1985-1988 (Thousands of Dollars)

| | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|
| United States | 10,504,808 | 7,600,605 | 8,612,570 | 9,122,384 |
| Asia Pacific Rim | 1,694,173 | 1,471,560 | 1,894,093 | 2,615,446 |
| Europe (East and West) | 576,799 | 768,480 | 576,530 | 657,314 |
| Other Africa | 298,655 | 276,836 | 309,344 | 382,822 |
| Middle East | 146,784 | 138,995 | 199,217 | 179,497 |
| South America | 223,016 | 215,448 | 204,700 | 166,139 |
| Central America | 75,886 | 97,198 | 173,521 | 155,034 |
| Other | 1,296 | 152 | 32 | 66 |
| Unidentifiable Country Exports | 85,883 | 30,303 | 3,946 | 4,812 |
| **TOTAL** | **13,610,300** | **10,599,577** | **11,973,953** | **13,283,514** |

Note Figures do not include service exports which amounted to $800 million in 1988

## Top Ten Alberta Commodity Exports, 1988, (Thousands of Dollars)

| **Commodity** | **Value of Exports** | **Percentage of Total** |
|---|---|---|
| 1 Crude Petroleum | 3,124,359 | 23.5 |
| 2 Natural Gas | 2,770,849 | 20.9 |
| 3 Wheat | 1,069,024 | 8.1 |
| 4 Sulphur | 777,137 | 5.9 |
| 5 Polyethylene | 544,272 | 4.1 |
| 6 Coal | 428,965 | 3.2 |
| 7 Styrene | 401,452 | 3.0 |
| 8 Wood Pulp | 385,364 | 2.9 |
| 9 Canola Seed | 230,629 | 1.7 |
| 10 Live Cattle | 222,273 | 1.7 |
| **TOTAL ABOVE** | **9,954,324** | **75.0** |
| **TOTAL ALL EXPORTS** | **13,283,514** | **100.0** |

# Major Foreign Export Markets, Alberta, 1986-1988 (Millions of Dollars)

| | 1986 | 1987 | 1988 |
|---|---|---|---|
| [illegible] | 7,583.8 | 8,612.6 | 9,122.4 |
| [illegible] | 711.9 | 746.6 | 1,000.6 |
| People's Republic of China | 141.2 | 302.3 | 642.4 |
| U S S R | 413.8 | 193.3 | 266.4 |
| Brazil | 148.9 | 122.8 | 92.3 |
| Republic of Korea (South) | 202.2 | 239.0 | 320.9 |
| India | 107.1 | 64.5 | 65.8 |
| 5Morocco | 136.1 | 180.6 | 225.1 |
| Taiwan | 122.3 | 167.8 | 200.7 |
| Indonesia | 77.3 | 51.7 | 66.5 |
| Tunisia | 57.0 | 58.6 | 48.9 |
| South Africa | 54.6 | 32.7 | 52.2 |
| Australia | 81.2 | 85.6 | 100.0 |
| Belgium Luxembourg | 37.2 | 51.2 | 41.1 |
| United Kingdom | 61.0 | 55.4 | 64.2 |
| Egypt | 15.1 | 4.4 | 3.4 |
| Cuba | 60.0 | 46 8 | 44.0 |
| The Netherlands | 54.0 | 81.4 | 109.6 |
| Algeria | 11.4 | 25.0 | 30.0 |
| Italy | 30.0 | 40.8 | 34.7 |
| Rest of World | 493.5 | 810.9 | 752.3 |
| **TOTAL DOMESTIC EXPORTS** | **10,599.6** | **11,974.0** | **13,283.5** |

Source Statistics Canada

Footnotes to Table 12.5:

(1) Includes the single origins of English, Irish, Scottish, Welsh, British, n.i.e., and Other British.

(2) Includes the single origins of French, Acadian, French Canadian and Quebecois.

(3) Includes the single origins of Inuit, Metis and North American Indian.

(4) Includes the single origins of Black and African Black.

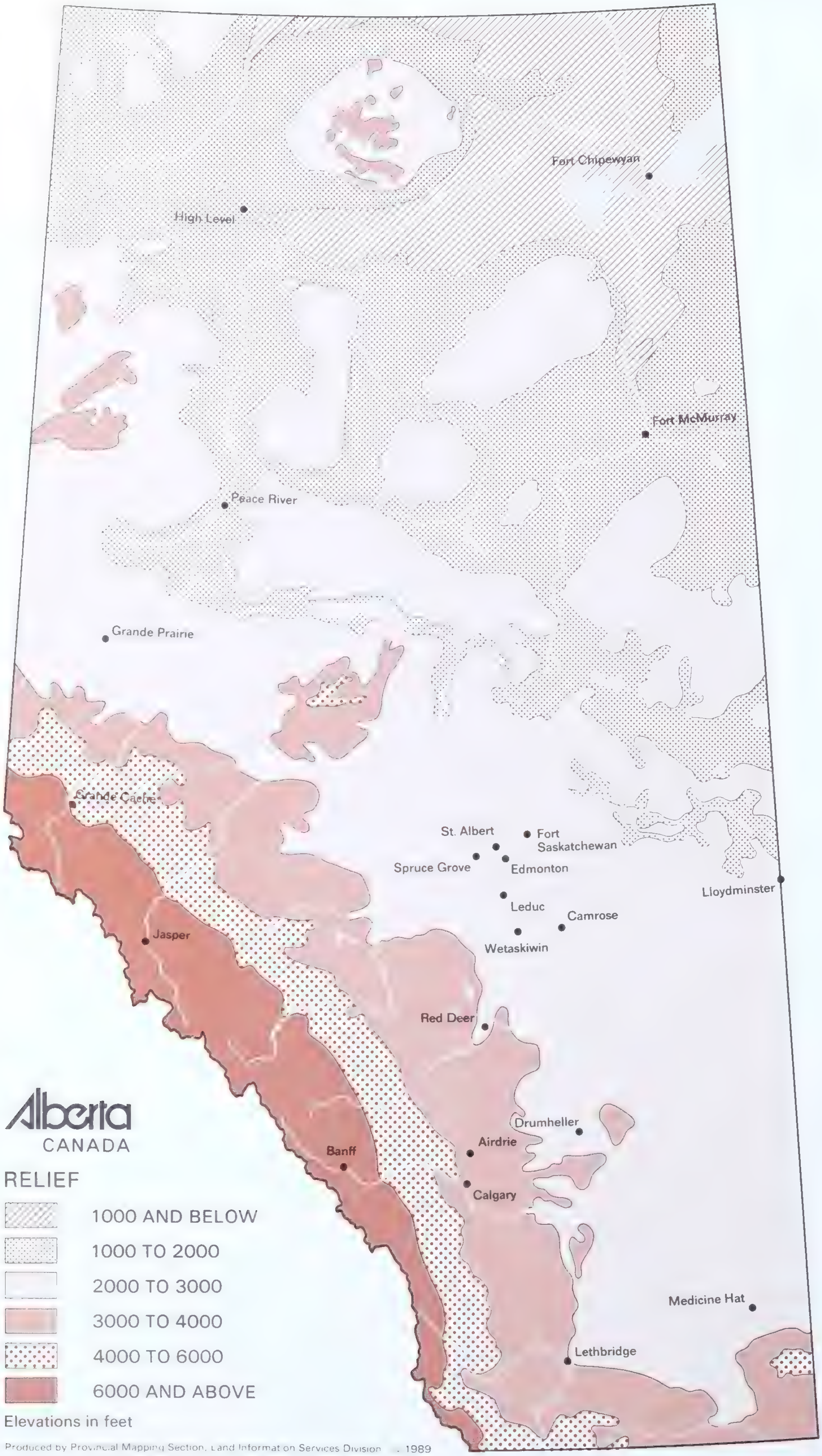
(5) Includes the single origins of Danish, Icelandic, Norwegian, Swedish and Scandinavian, n.i.e.

(6) Includes the single origins of Bengali, Gujarati, Punjabi, Singhaiese, Tamil, Bangladeshi, n.i.e., East Indian, n.i.e., Pakistani, n.i.e., and Sri Lankan, n.i.e.

(7) Includes persons who report more than one ethnic origin.

n.i.e. = not included elsewhere

MAPS



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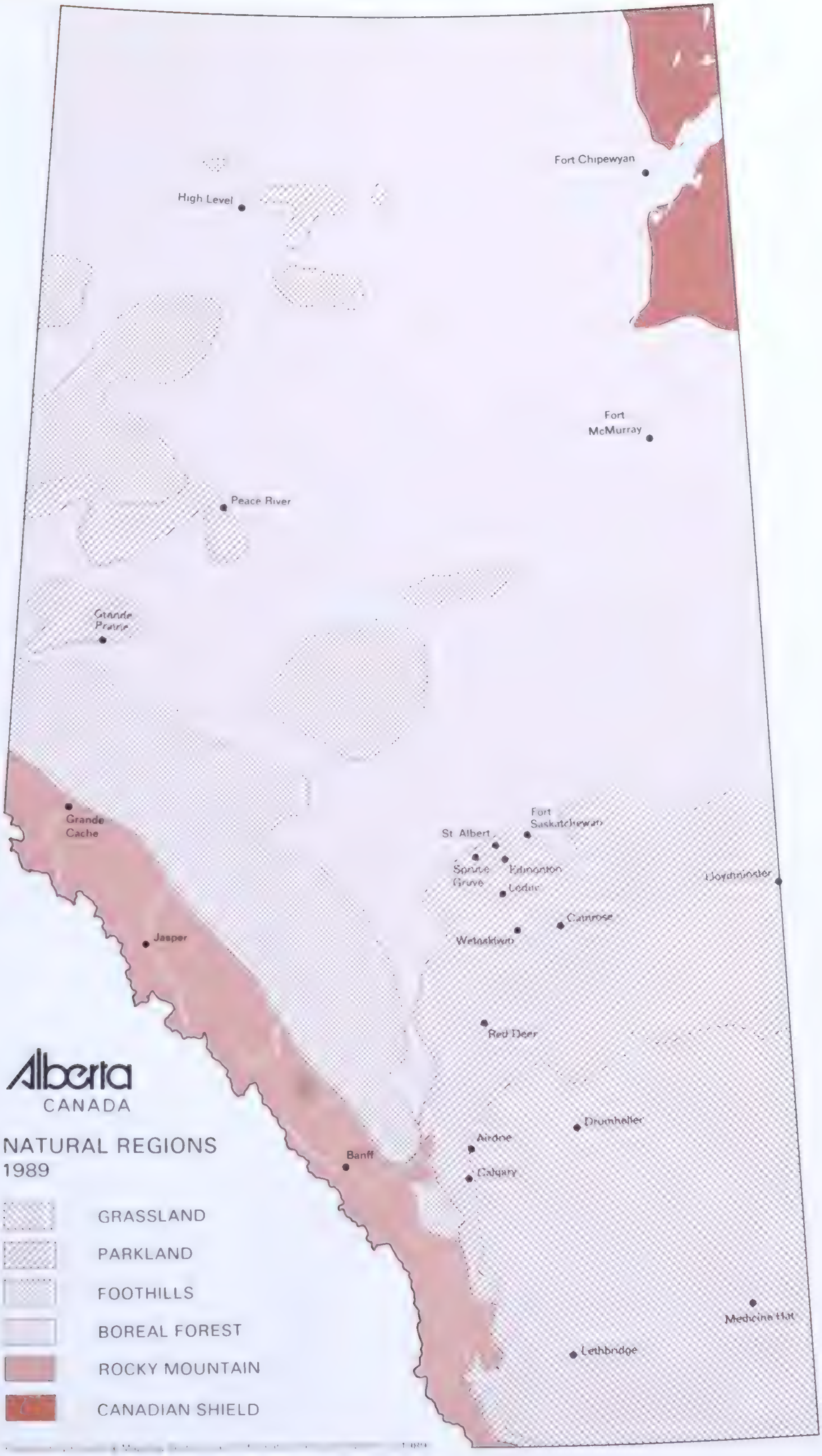
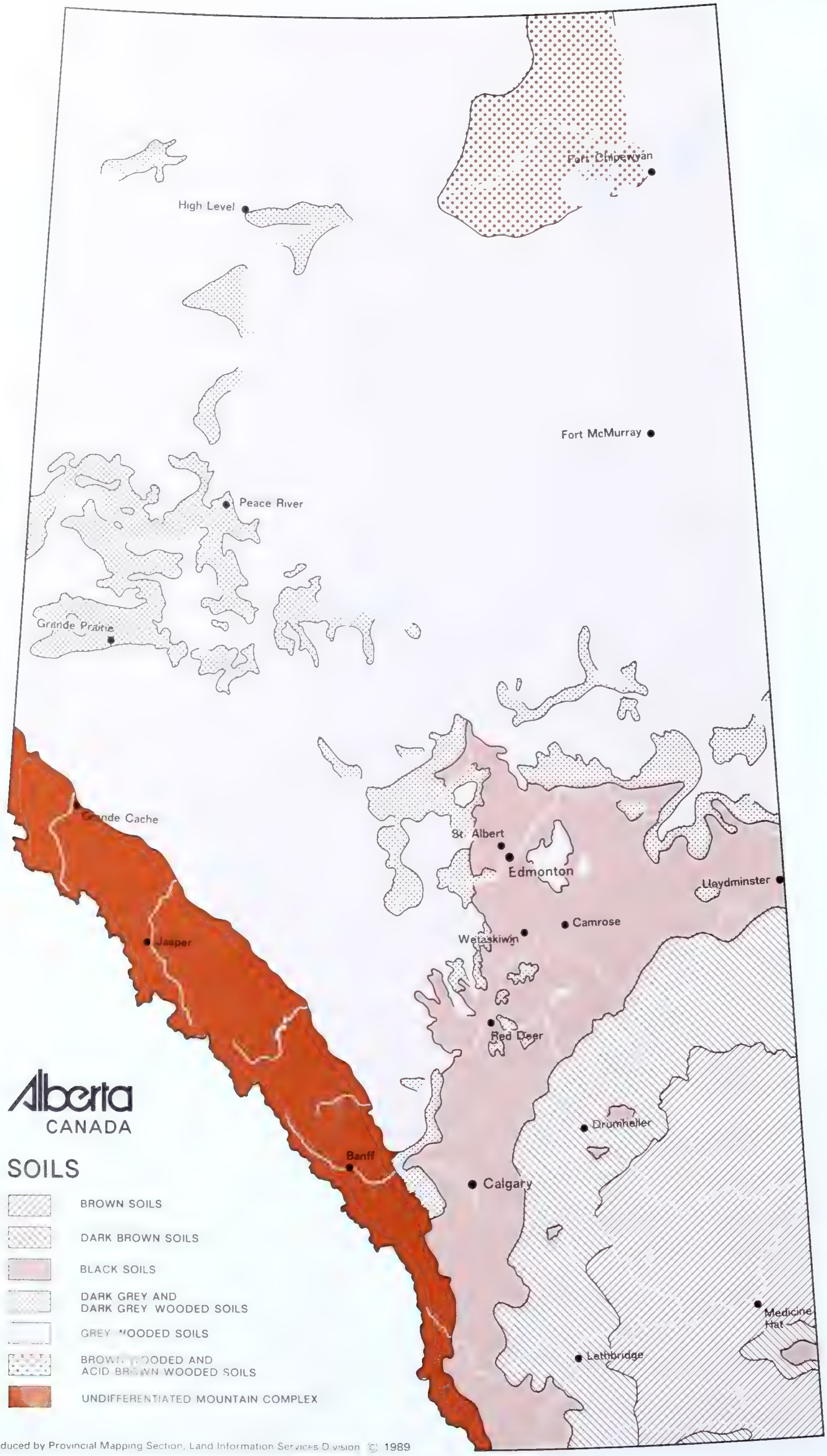

Alberta
CANADA
NATURAL REGIONS
1989
GRASSLAND
PARKLAND
FOOTHILLS
BOREAL FOREST
ROCKY MOUNTAIN
CANADIAN SHIELD
Fort Chipewyan
High Level
Fort McMurray
Peace River
Grande Prairie
Grande Cache
Fort Saskatchewan
St. Albert
Spruce Grove
Edmonton
Leduc
Lloydminster
Camrose
Wetaskiwin
Jasper
Red Deer
Drumheller
Airdrie
Banff
Calgary
Medicine Hat
Lethbridge



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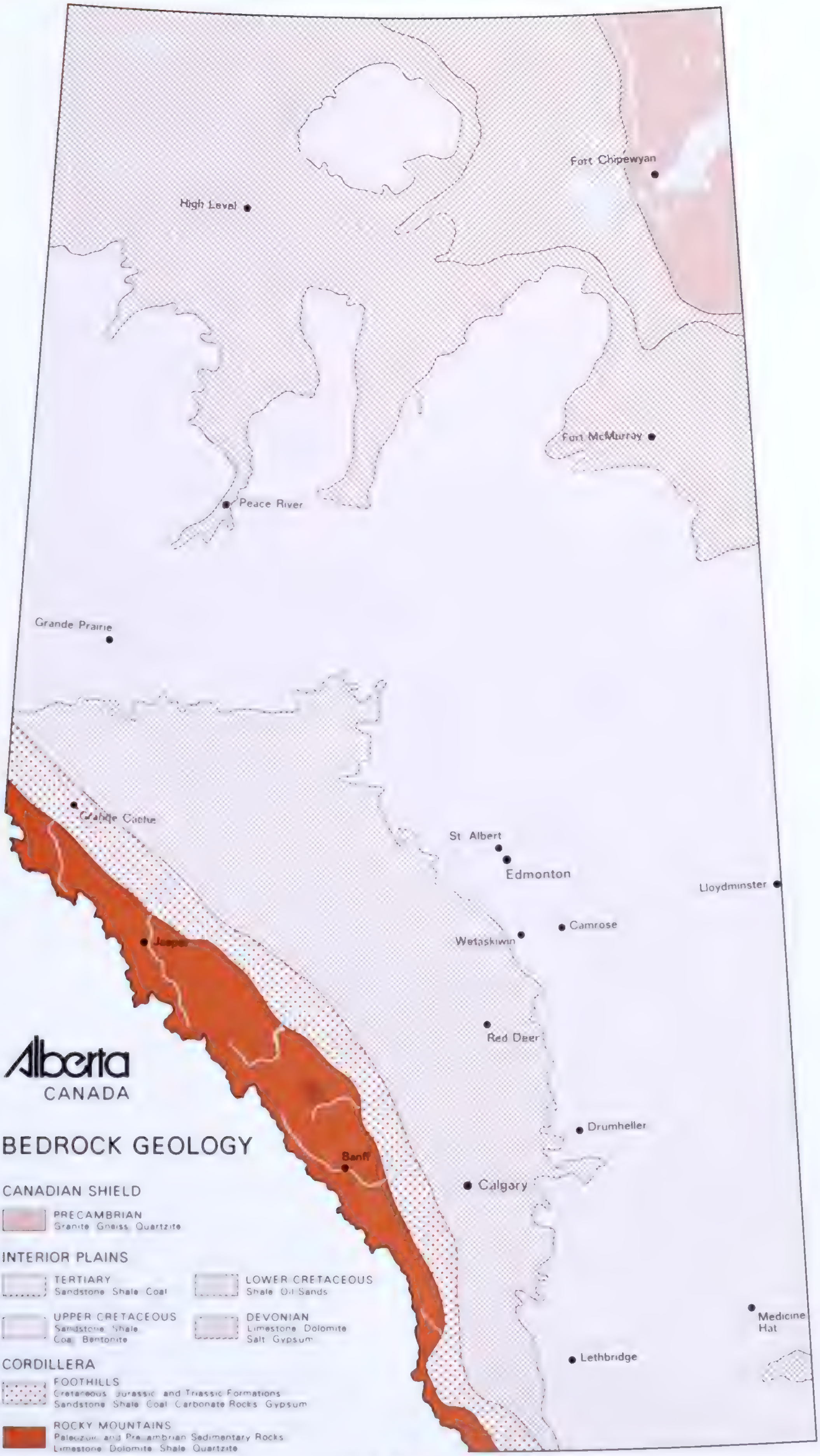

Alberta
CANADA

## BEDROCK GEOLOGY

### CANADIAN SHIELD

- PRECAMBRIAN — Granite Gneiss Quartzite

### INTERIOR PLAINS

- TERTIARY — Sandstone Shale Coal
- LOWER CRETACEOUS — Shale Oil Sands
- UPPER CRETACEOUS — Sandstone Shale Coal Bentonite
- DEVONIAN — Limestone Dolomite Salt Gypsum

### CORDILLERA

- FOOTHILLS — Cretaceous Jurassic and Triassic Formations Sandstone Shale Coal Carbonate Rocks Gypsum
- ROCKY MOUNTAINS — Paleozoic and Precambrian Sedimentary Rocks Limestone Dolomite Shale Quartzite

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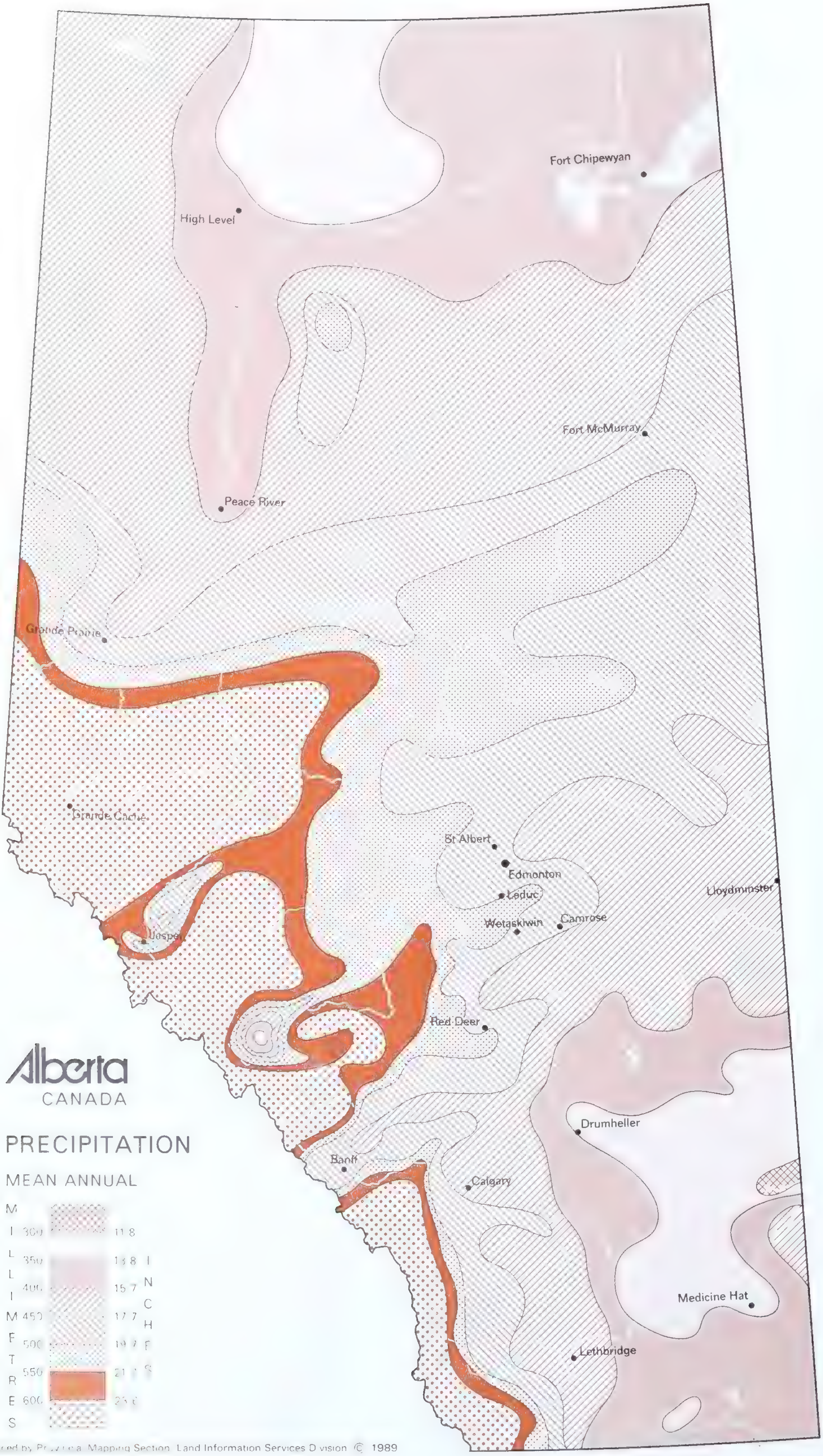

Alberta
CANADA

## PRECIPITATION

### MEAN ANNUAL

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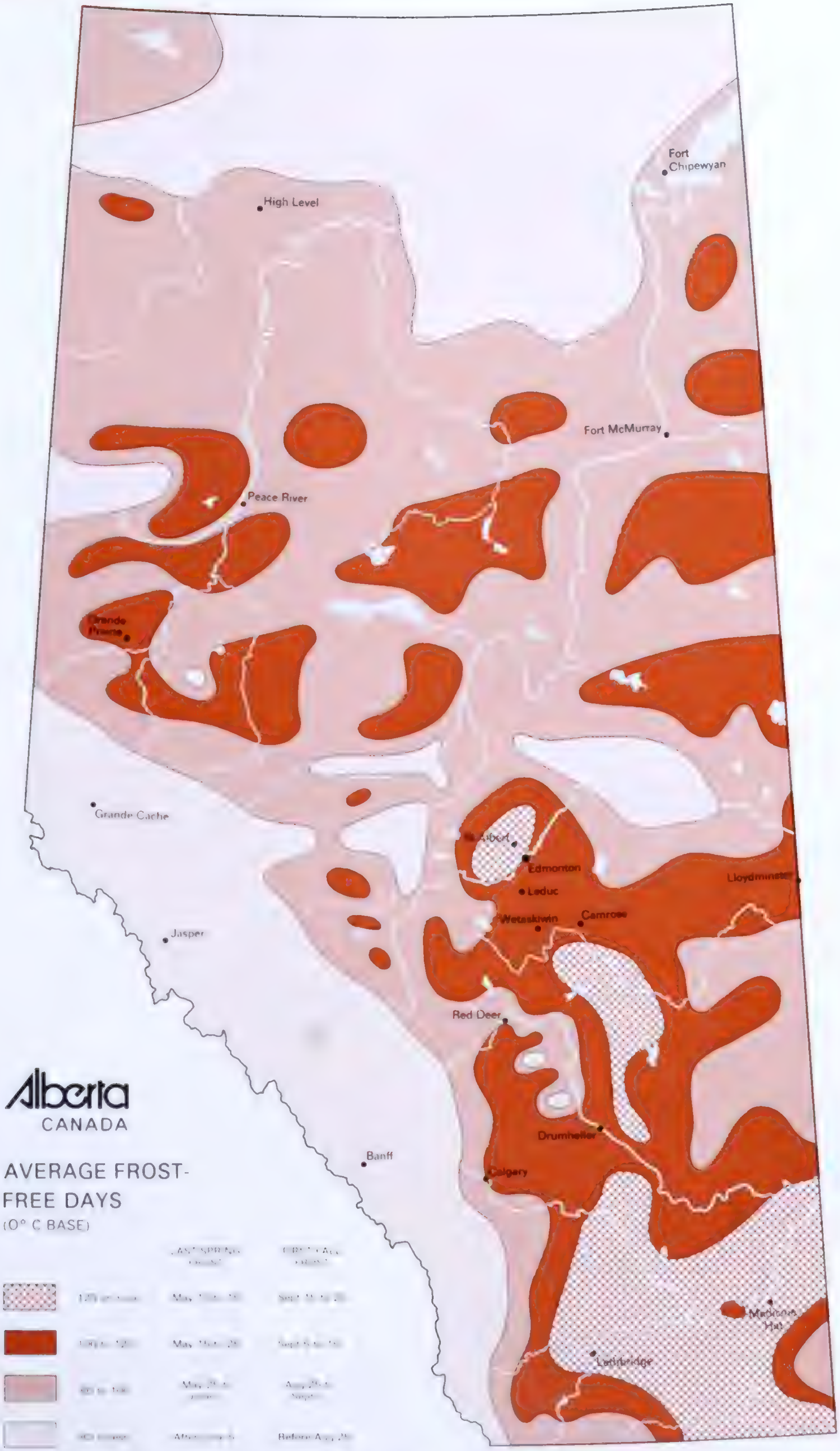
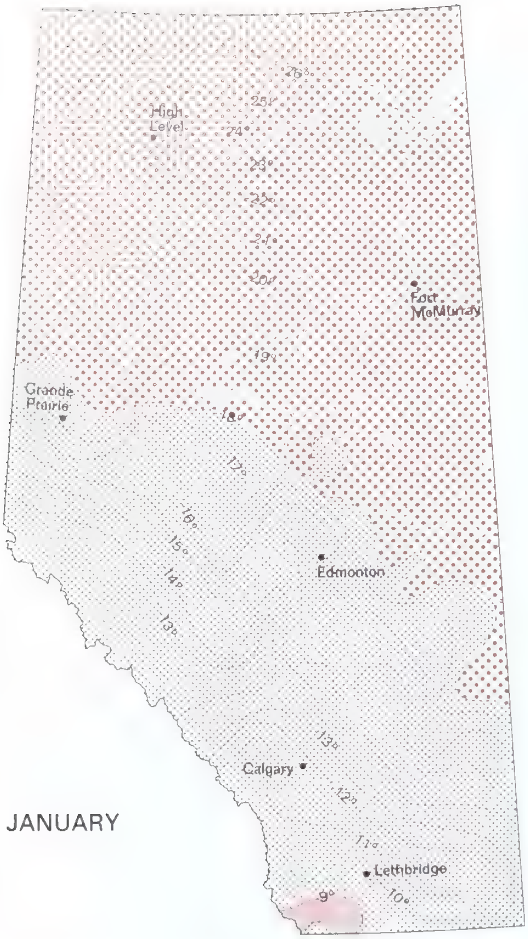
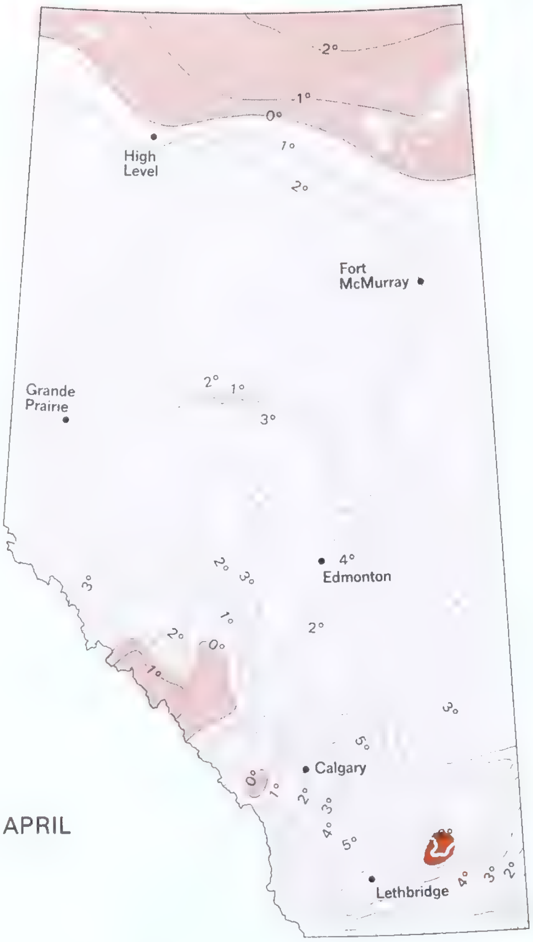
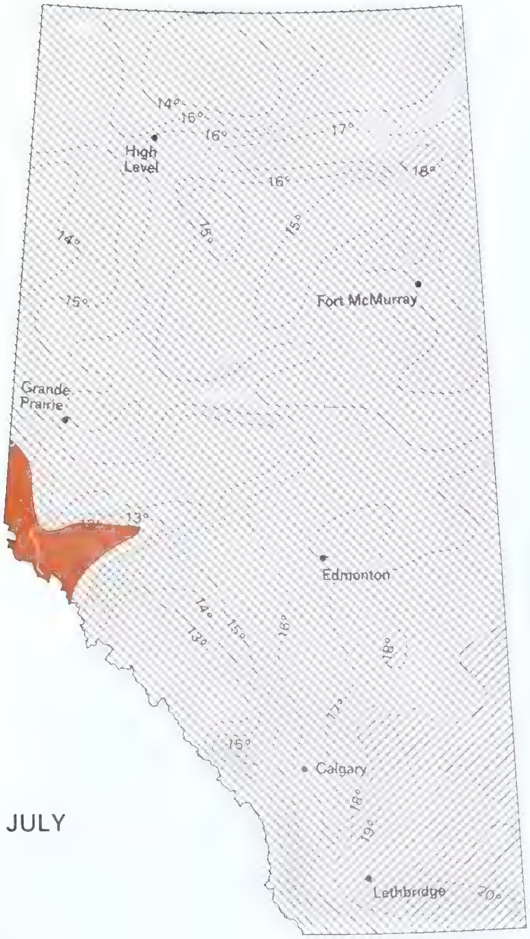

Fort Chipewyan
High Level
Fort McMurray
Peace River
Grande Prairie
Grande Cache
St. Albert
Edmonton
Lloydminster
Leduc
Wetaskiwin
Camrose
Jasper
Red Deer
Alberta
CANADA
Drumheller
Banff
Calgary
AVERAGE FROST-FREE DAYS
(O° C BASE)
LAST SPRING FROST
FIRST FALL FROST
Before Aug. 25
Medicine Hat
Lethbridge



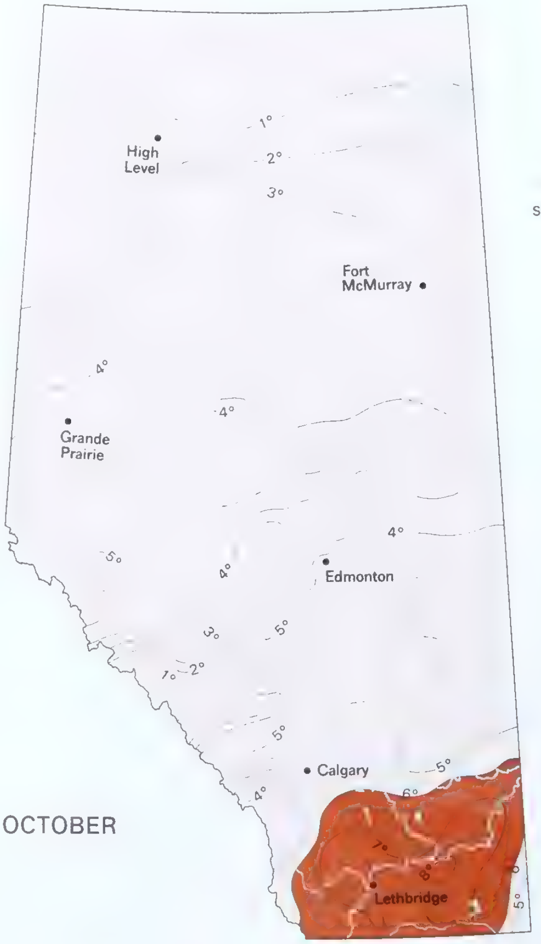
JANUARY



APRIL



JULY



OCTOBER

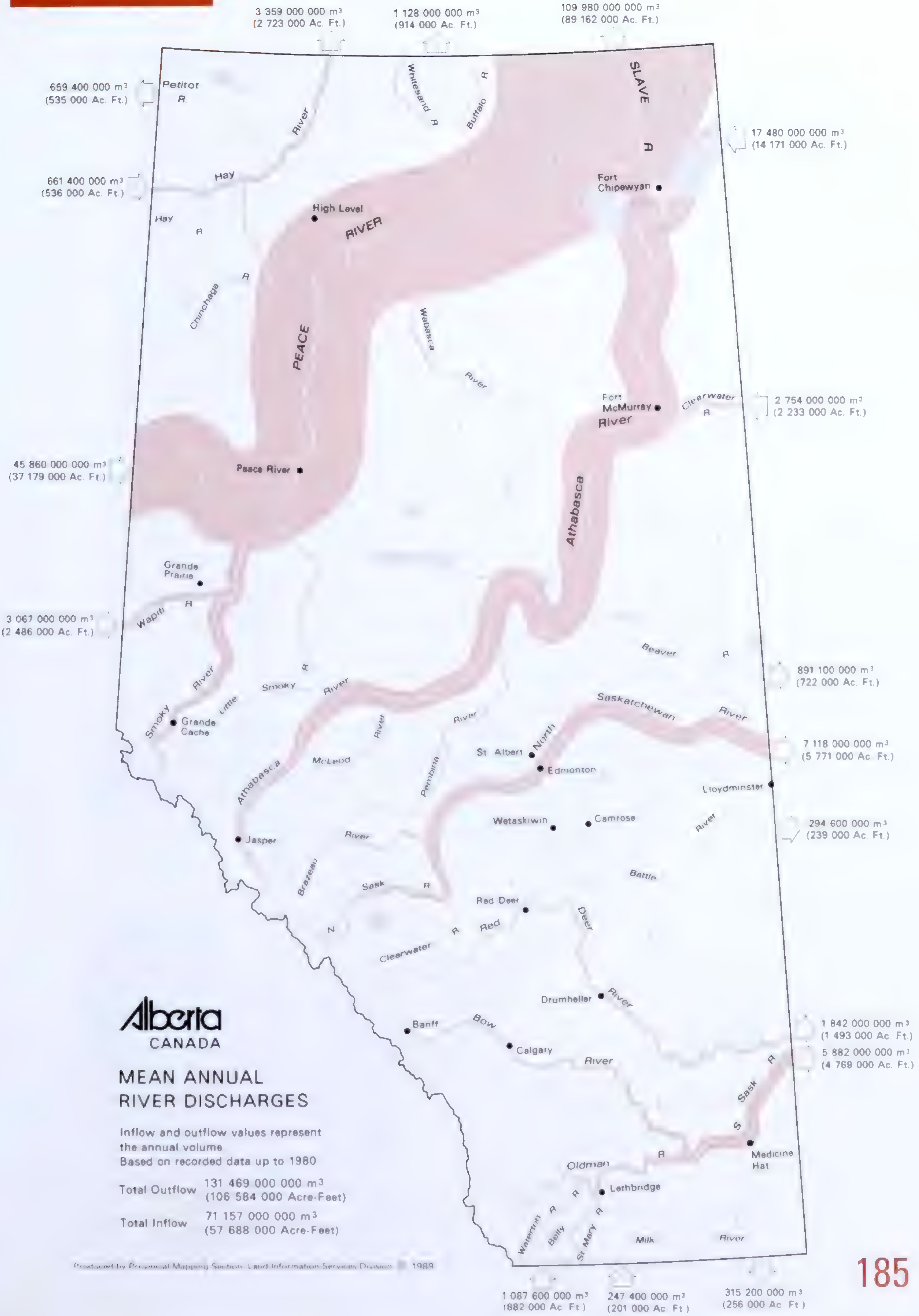
# Alberta
CANADA

# MEAN TEMPERATURE

24°
18°
12°
6°
0°
-9°
-18°
-27°

ISOTHERMS IN DEGREES CELSIUS

Produced by Provincial Mapping Section, Land Information Services Division © 1989


3 359 000 000 m$^3$ (2 723 000 Ac. Ft.)
1 128 000 000 m$^3$ (914 000 Ac. Ft.)
109 980 000 000 m$^3$ (89 162 000 Ac. Ft.)
659 400 000 m$^3$ (535 000 Ac. Ft.)
Petitot R.
River
Whitesand R
R
Buffalo
SLAVE R
17 480 000 000 m$^3$ (14 171 000 Ac. Ft.)
661 400 000 m$^3$ (536 000 Ac. Ft.)
Hay
Hay R
Fort Chipewyan
High Level
RIVER
R
Chinchaga
PEACE
Wabasca
River
Fort McMurray
Clearwater R
2 754 000 000 m$^3$ (2 233 000 Ac. Ft.)
River
45 860 000 000 m$^3$ (37 179 000 Ac. Ft.)
Peace River
Athabasca
Grande Prairie
Wapiti R
3 067 000 000 m$^3$ (2 486 000 Ac. Ft.)
Beaver R
891 100 000 m$^3$ (722 000 Ac. Ft.)
River
Smoky R
River
Smoky
Little
Grande Cache
River
River
Saskatchewan River
North
7 118 000 000 m$^3$ (5 771 000 Ac. Ft.)
St Albert
Edmonton
McLeod
Athabasca
Pembina
Lloydminster
Wetaskiwin
Camrose
River
294 600 000 m$^3$ (239 000 Ac. Ft.)
Jasper
River
Brazeau
Battle
Sask R
Red Deer
Deer
N
Red R
Clearwater
Drumheller
River
Banff
Bow
1 842 000 000 m$^3$ (1 493 000 Ac. Ft.)
5 882 000 000 m$^3$ (4 769 000 Ac. Ft.)
Calgary
River
R
Sask
S
Medicine Hat
R
Oldman
Lethbridge
R
R
R
Waterton
Belly
St Mary
Milk
River
1 087 600 000 m$^3$ (882 000 Ac. Ft.)
247 400 000 m$^3$ (201 000 Ac. Ft.)
315 200 000 m$^3$ (256 000 Ac. Ft.)

Alberta
CANADA

# MEAN ANNUAL RIVER DISCHARGES

Inflow and outflow values represent the annual volume
Based on recorded data up to 1980

| | |
|---|---|
| Total Outflow | 131 469 000 000 m$^3$<br>(106 584 000 Acre-Feet) |
| Total Inflow | 71 157 000 000 m$^3$<br>(57 688 000 Acre-Feet) |

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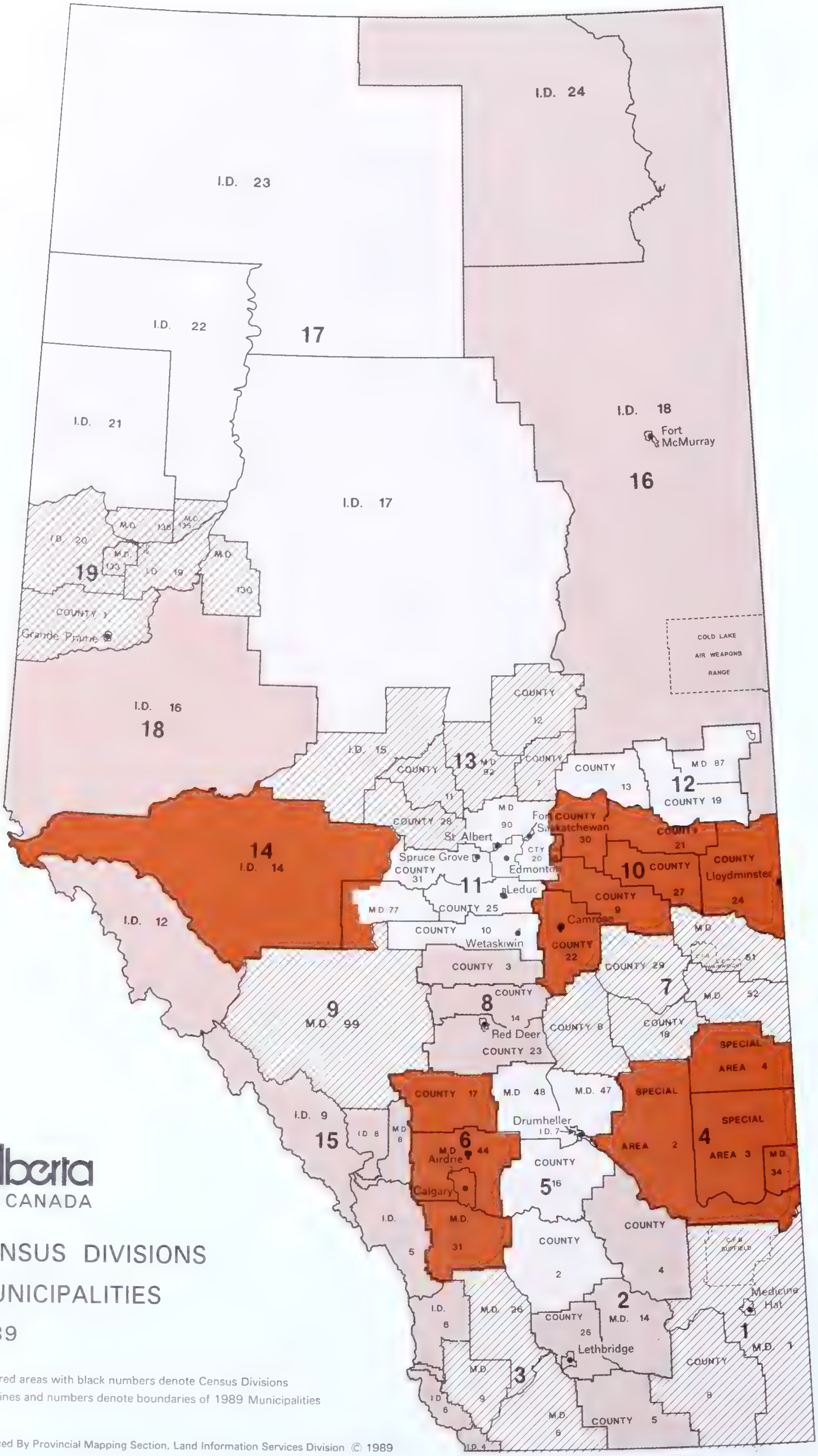

Alberta
CANADA

# CENSUS DIVISIONS MUNICIPALITIES

1989

Coloured areas with black numbers denote Census Divisions
Solid lines and numbers denote boundaries of 1989 Municipalities

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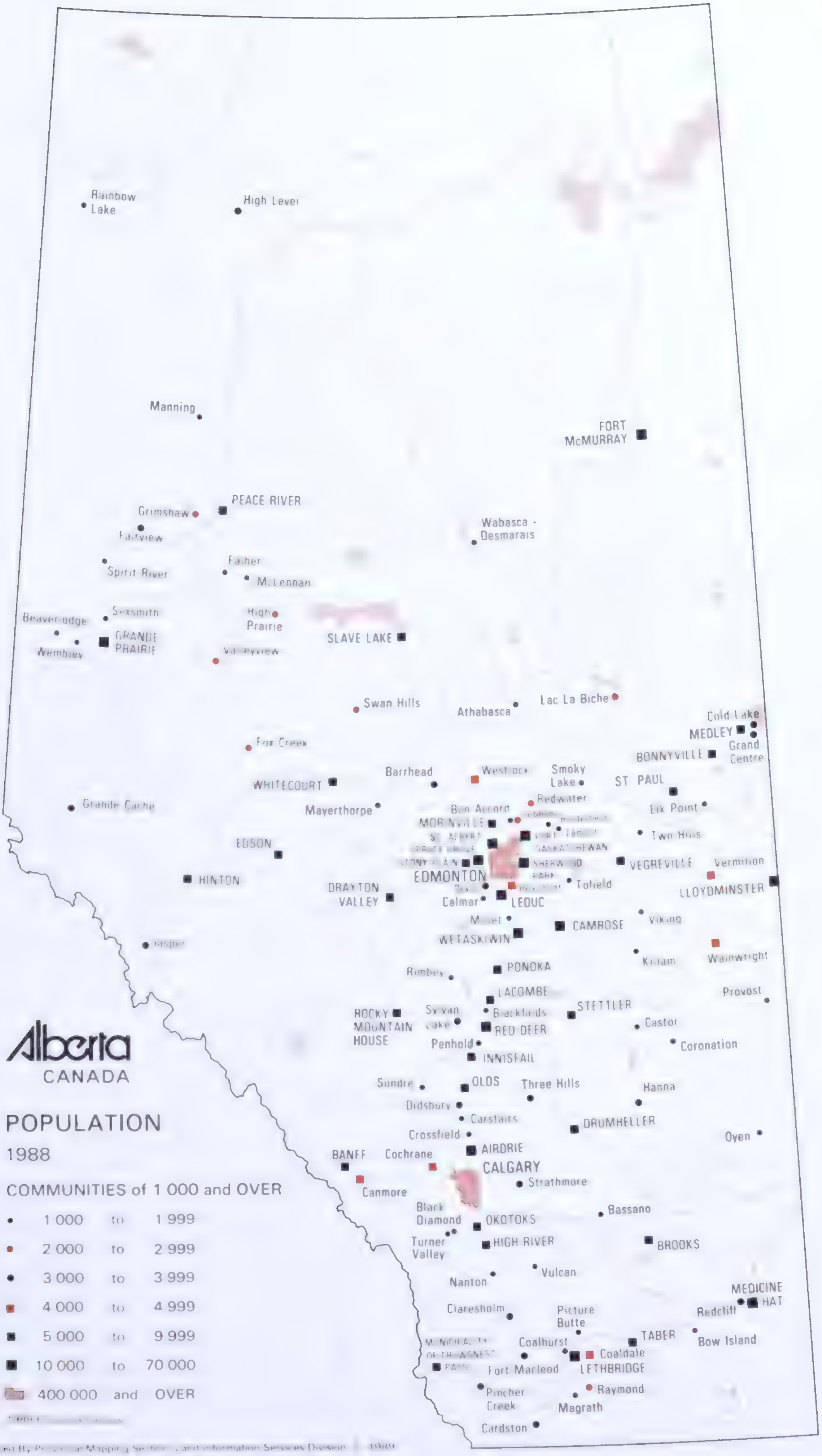

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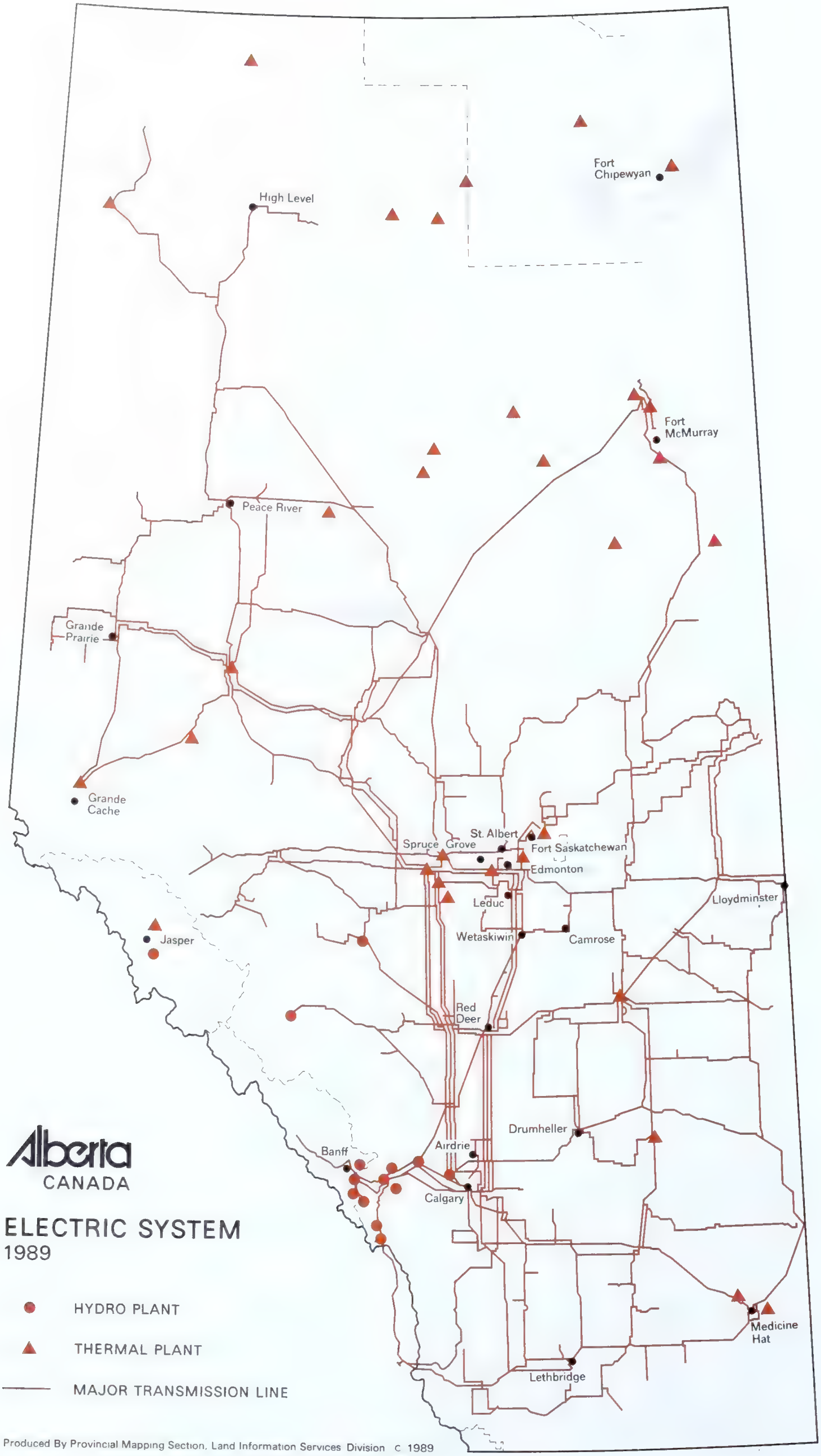

Alberta
CANADA

# ELECTRIC SYSTEM
1989

● HYDRO PLANT

▲ THERMAL PLANT

— MAJOR TRANSMISSION LINE

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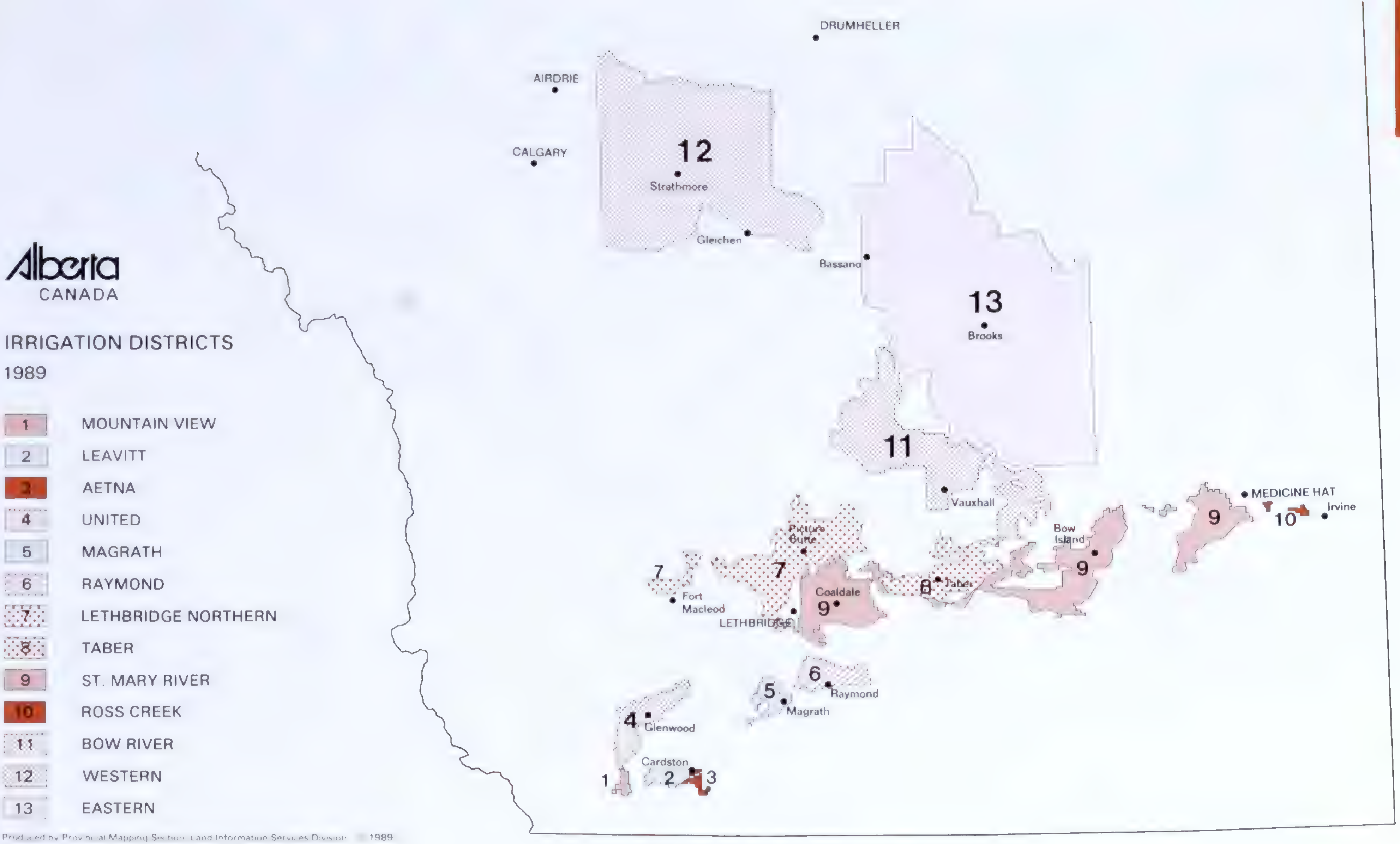

## IRRIGATION DISTRICTS

1989

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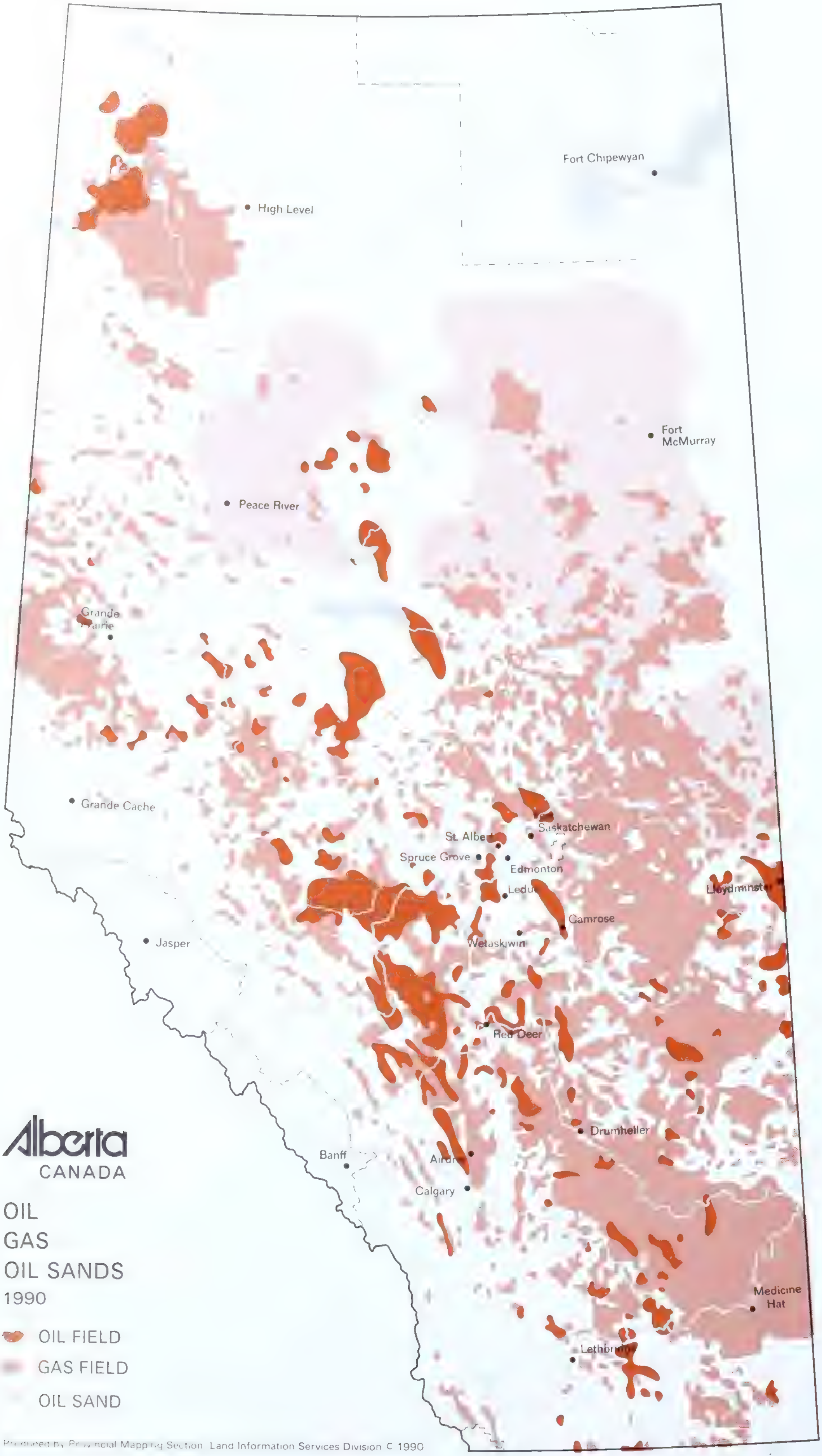

OIL
GAS
OIL SANDS
1990

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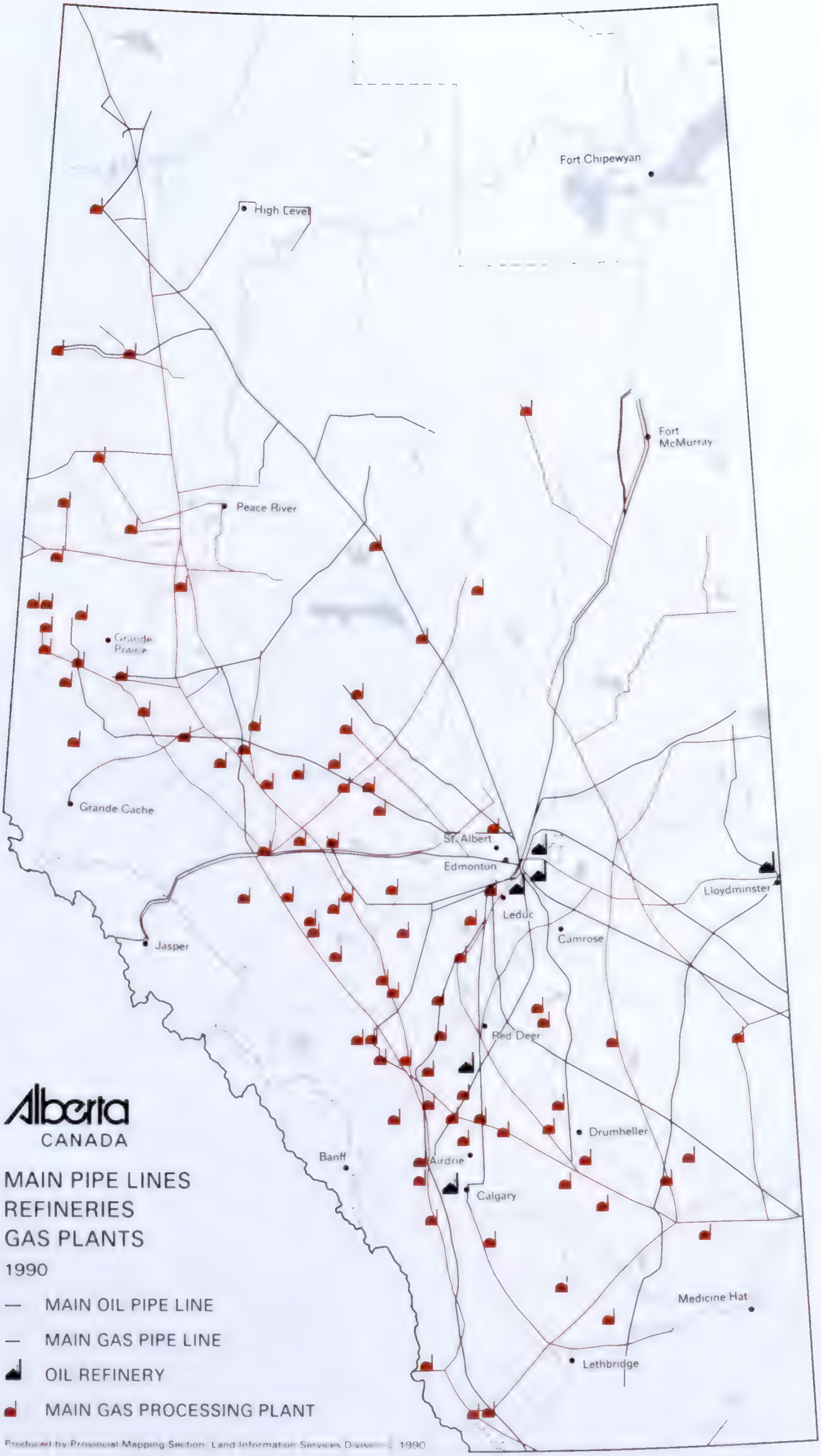

Alberta
CANADA

## MAIN PIPE LINES
## REFINERIES
## GAS PLANTS

1990

— MAIN OIL PIPE LINE

— MAIN GAS PIPE LINE

▲ OIL REFINERY

● MAIN GAS PROCESSING PLANT

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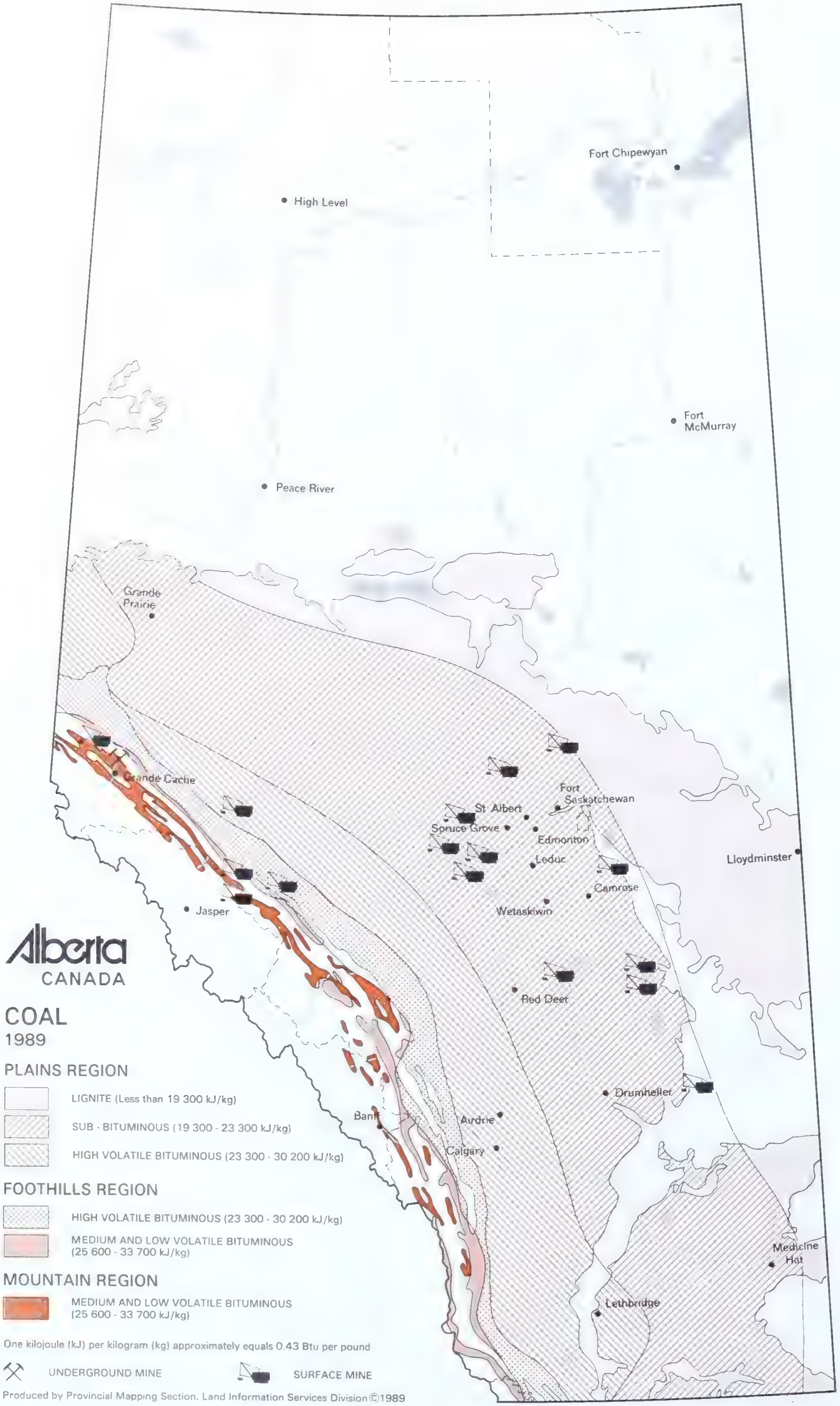

Alberta
CANADA

COAL
1989

PLAINS REGION
LIGNITE (Less than 19 300 kJ/kg)
SUB - BITUMINOUS (19 300 - 23 300 kJ/kg)
HIGH VOLATILE BITUMINOUS (23 300 - 30 200 kJ/kg)
FOOTHILLS REGION
HIGH VOLATILE BITUMINOUS (23 300 - 30 200 kJ/kg)
MEDIUM AND LOW VOLATILE BITUMINOUS (25 600 - 33 700 kJ/kg)
MOUNTAIN REGION
MEDIUM AND LOW VOLATILE BITUMINOUS (25 600 - 33 700 kJ/kg)
One kilojoule (kJ) per kilogram (kg) approximately equals 0.43 Btu per pound
UNDERGROUND MINE
SURFACE MINE
Fort Chipewyan
High Level
Fort McMurray
Peace River
Grande Prairie
Grande Cache
St Albert
Fort Saskatchewan
Spruce Grove
Edmonton
Leduc
Lloydminster
Camrose
Jasper
Wetaskiwin
Red Deer
Drumheller
Banff
Airdrie
Calgary
Medicine Hat
Lethbridge

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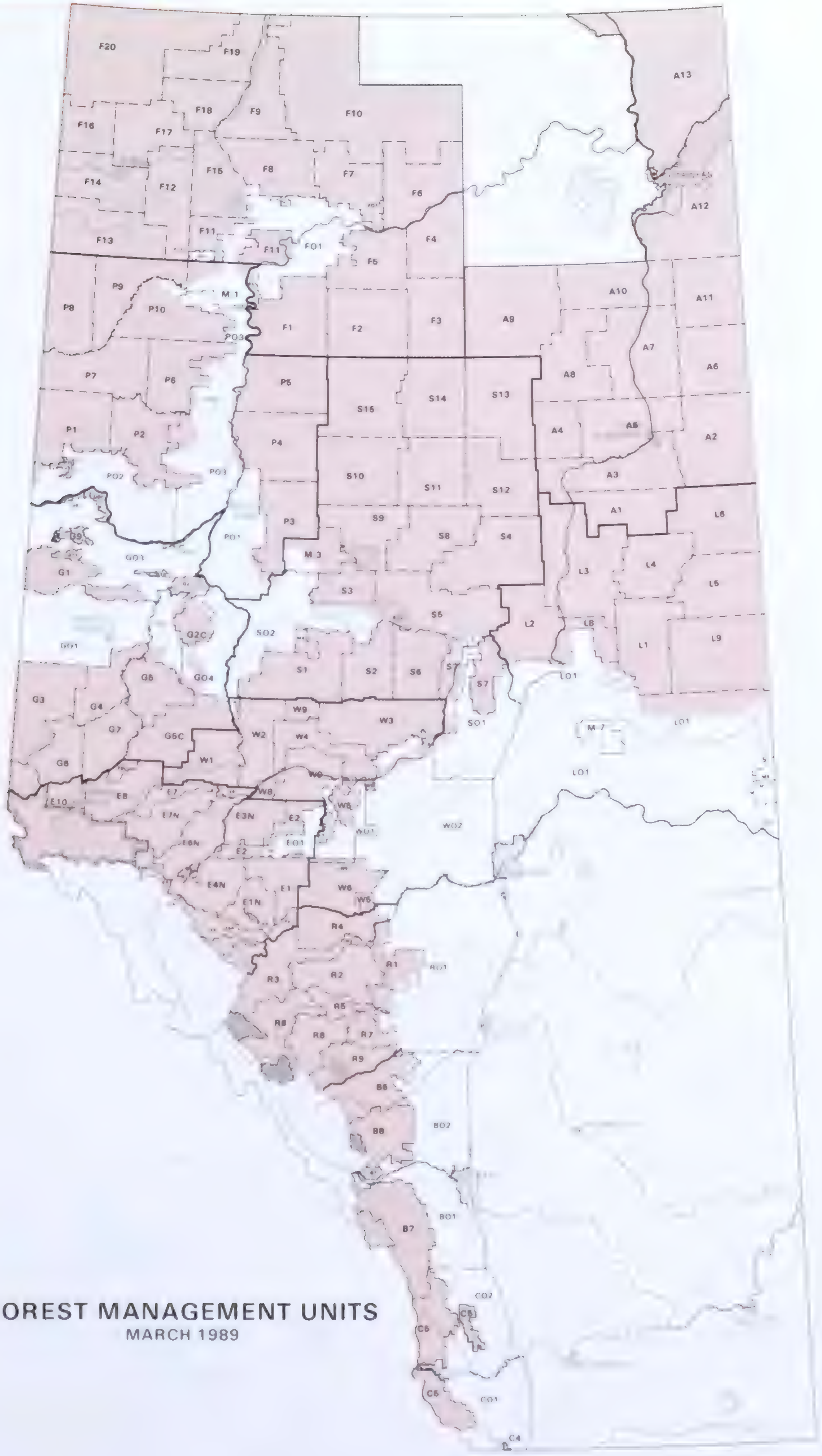

# FOREST MANAGEMENT UNITS

MARCH 1989

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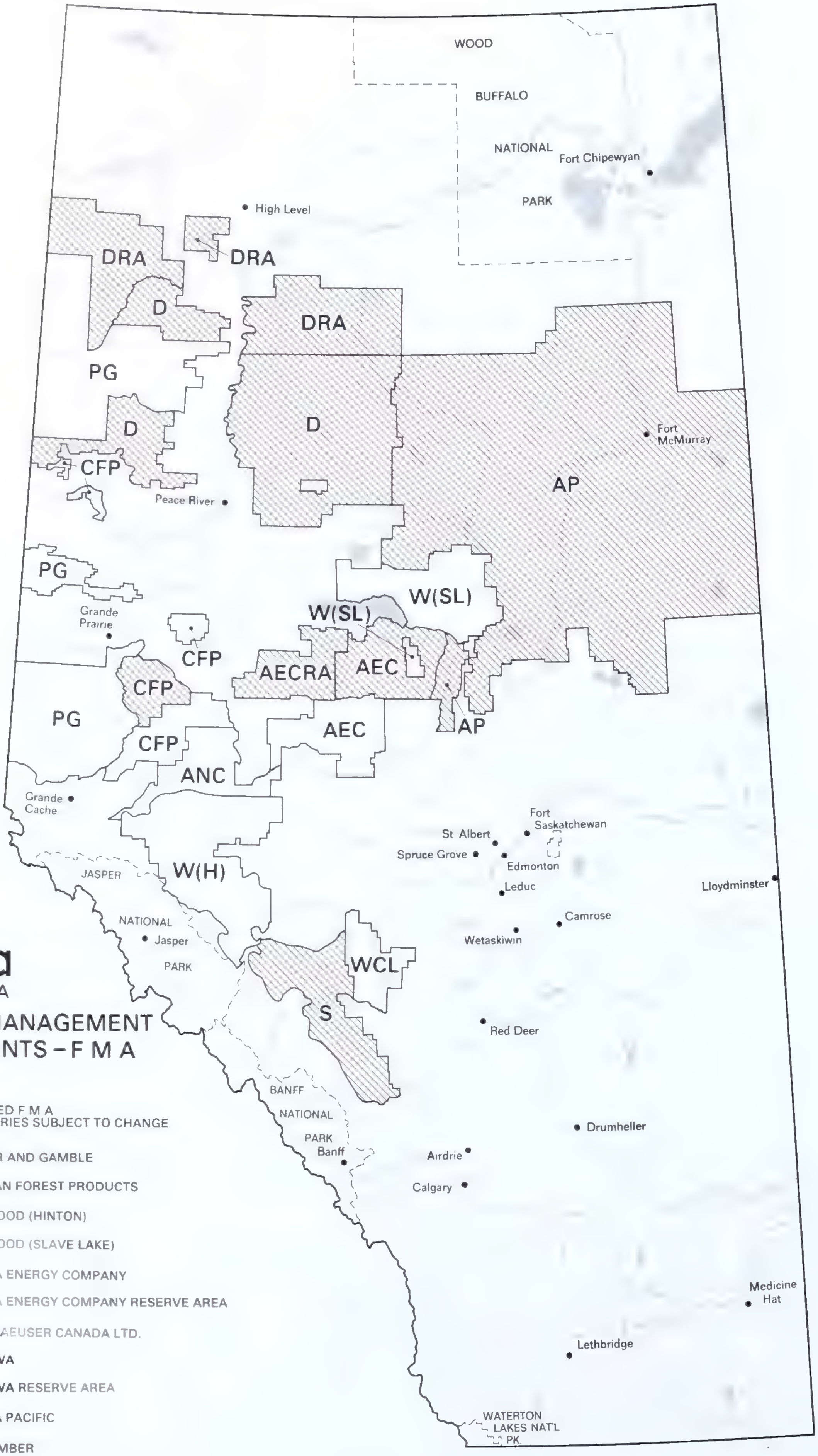

Alberta
CANADA

# FOREST MANAGEMENT AGREEMENTS – F M A

1989

| | |
|---|---|
| ▨ | PROPOSED F M A<br>BOUNDARIES SUBJECT TO CHANGE |
| PG | PROCTER AND GAMBLE |
| CFP | CANADIAN FOREST PRODUCTS |
| W(H) | WELDWOOD (HINTON) |
| W(SL) | WELDWOOD (SLAVE LAKE) |
| AEC | ALBERTA ENERGY COMPANY |
| AECRA | ALBERTA ENERGY COMPANY RESERVE AREA |
| WCL | WEYERHAEUSER CANADA LTD. |
| D | DAISHOWA |
| DRA | DAISHOWA RESERVE AREA |
| AP | ALBERTA PACIFIC |
| ANC | A.N.C. TIMBER |
| S | SUNPINE |

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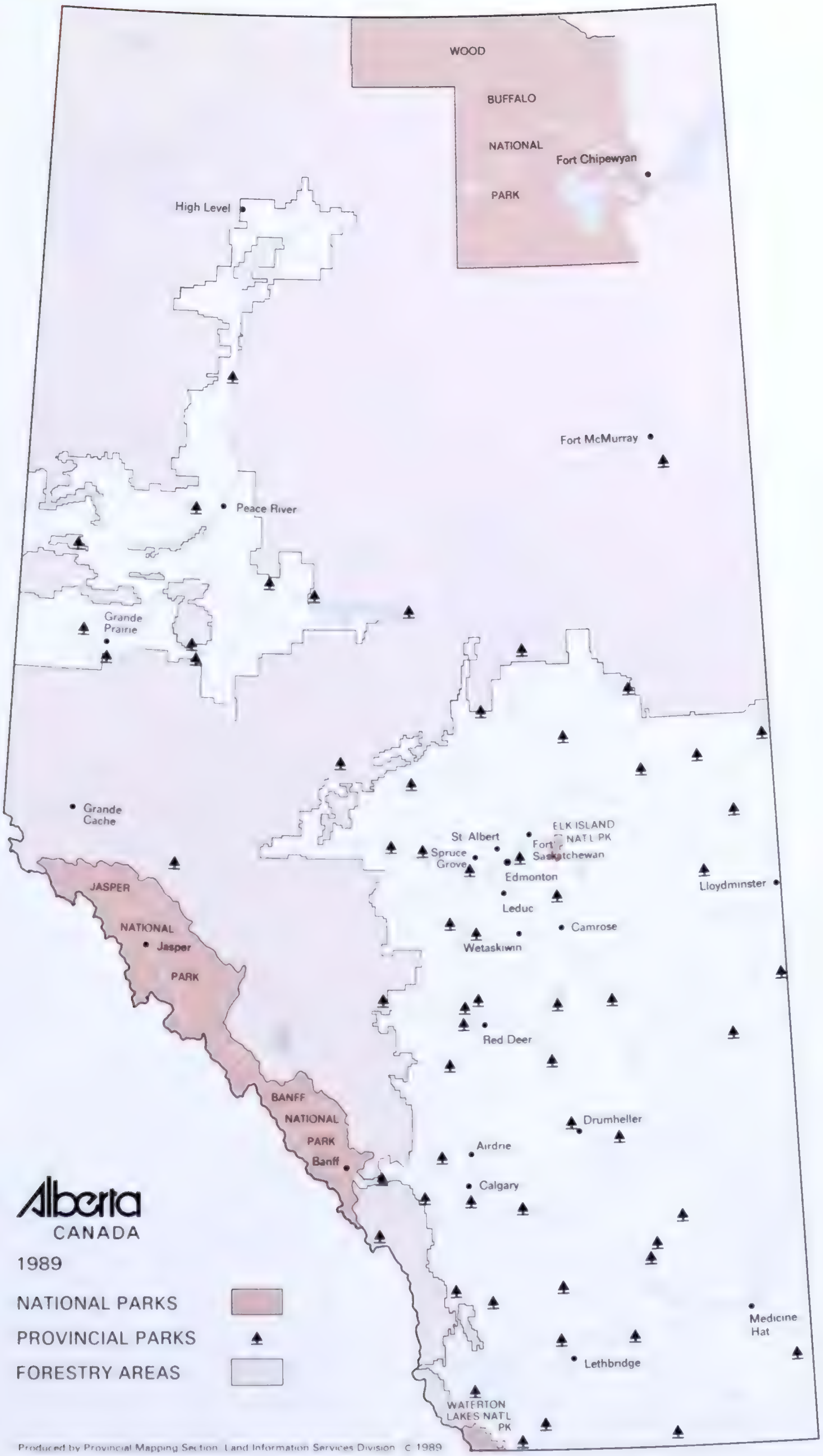

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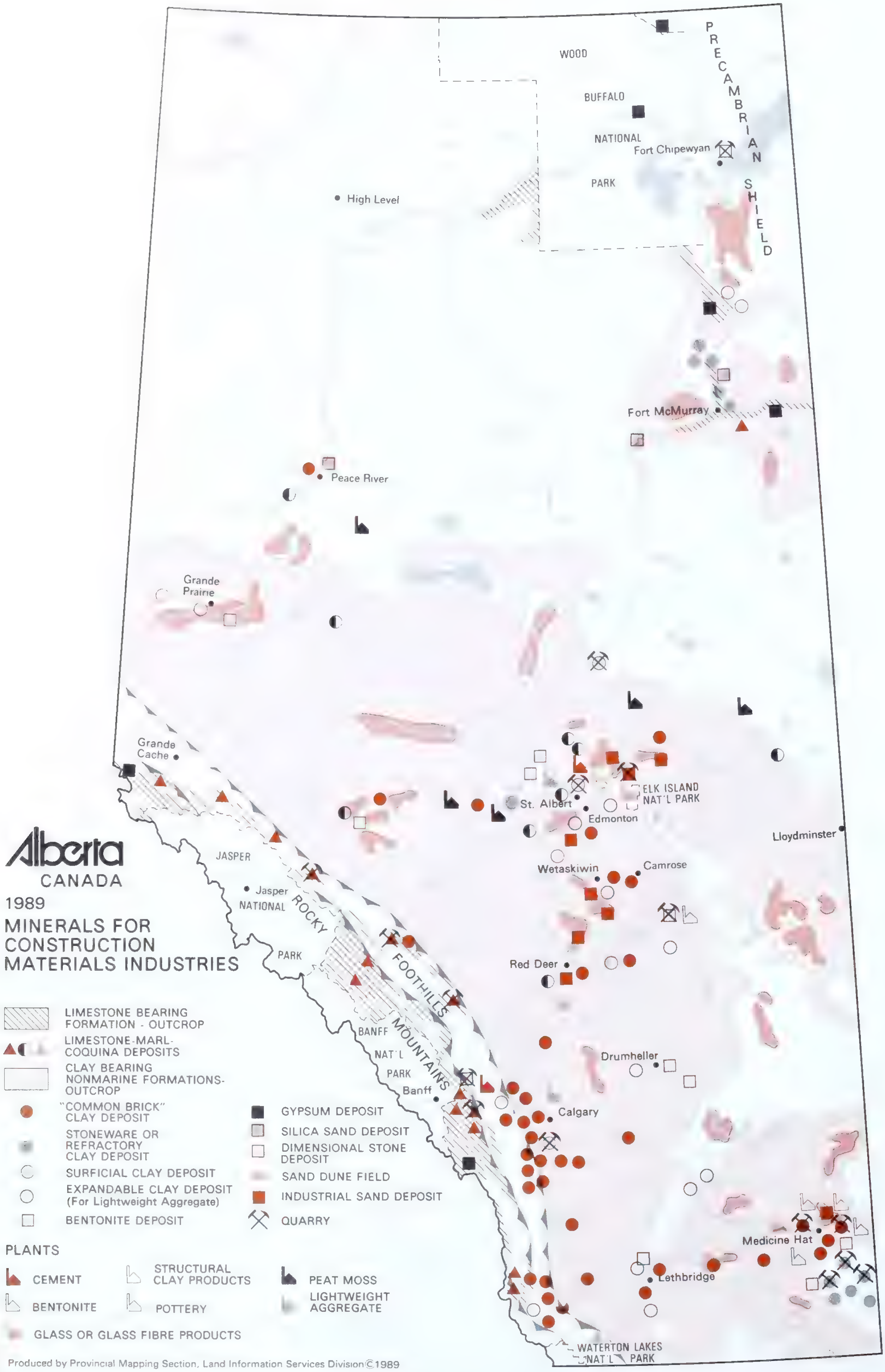

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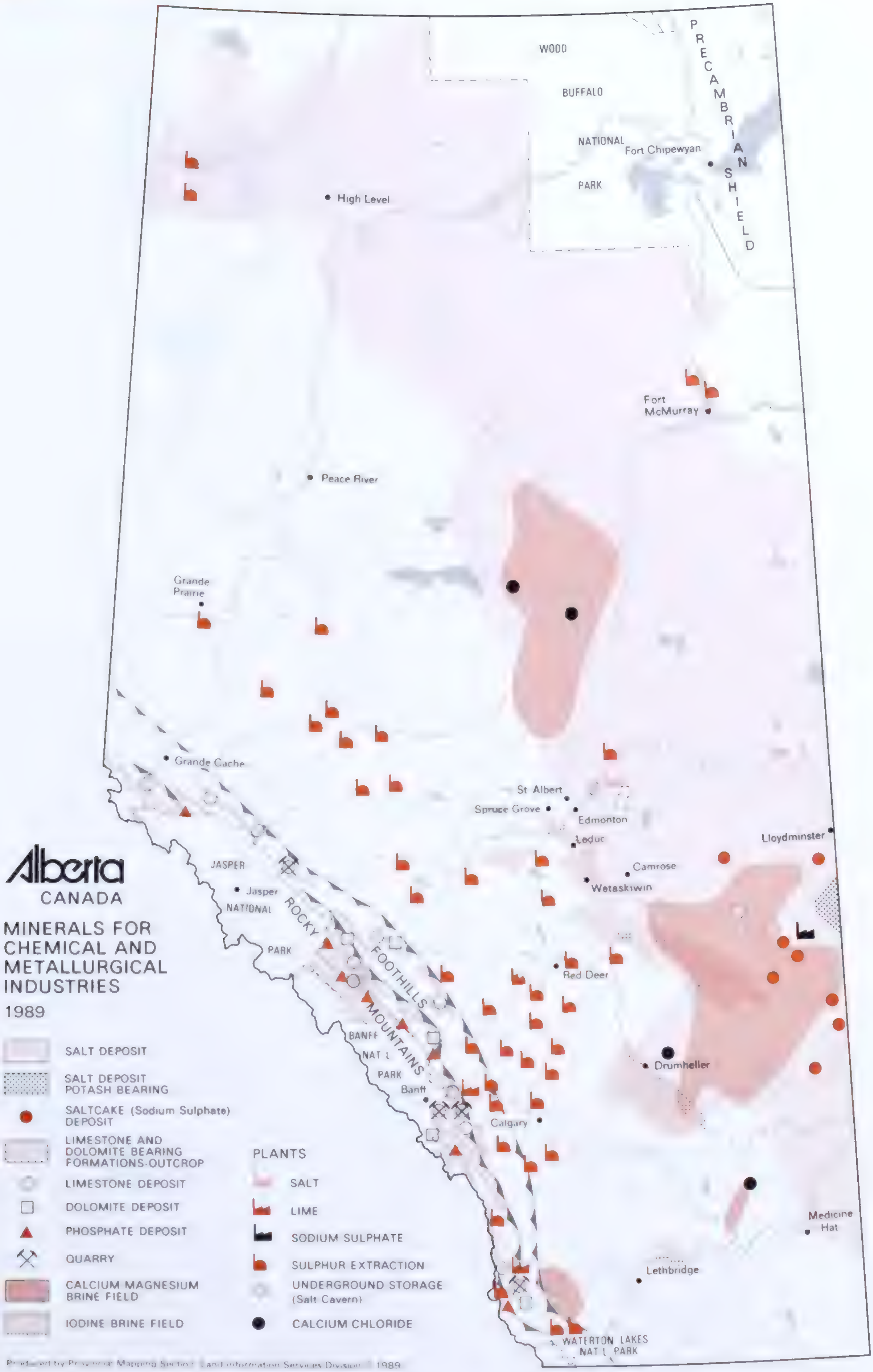

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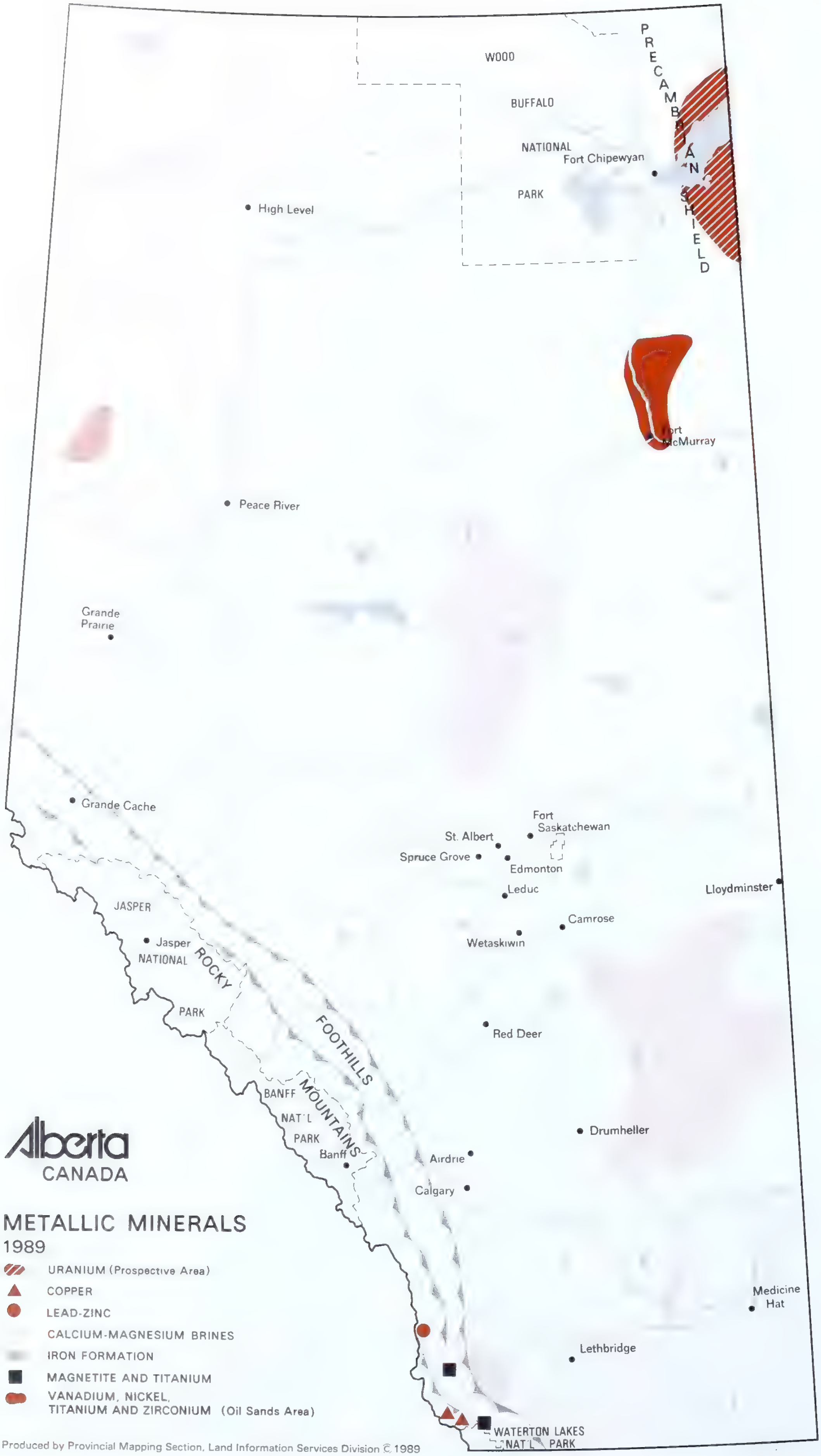

## METALLIC MINERALS

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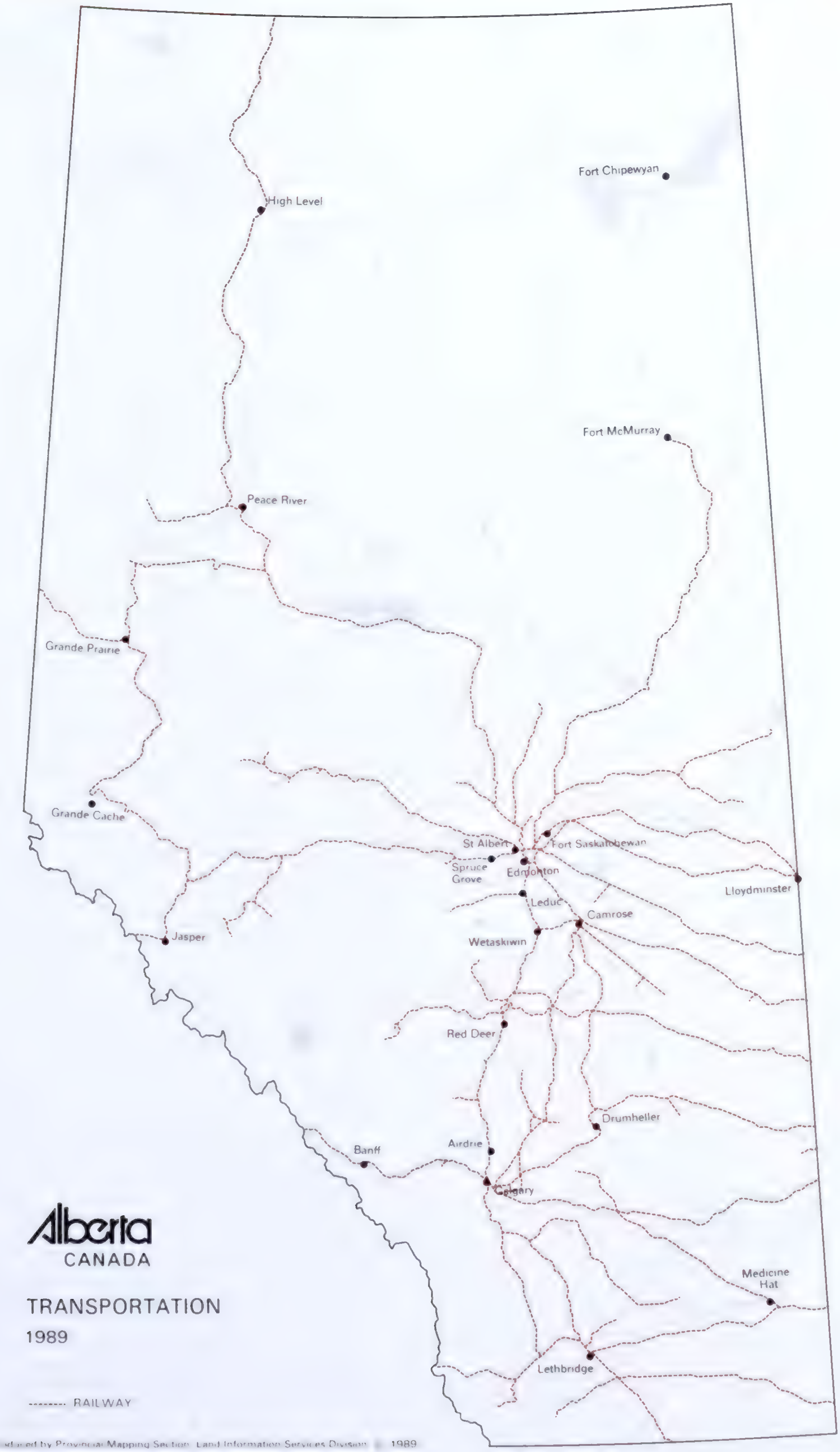

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TRANSPORTATION
1989

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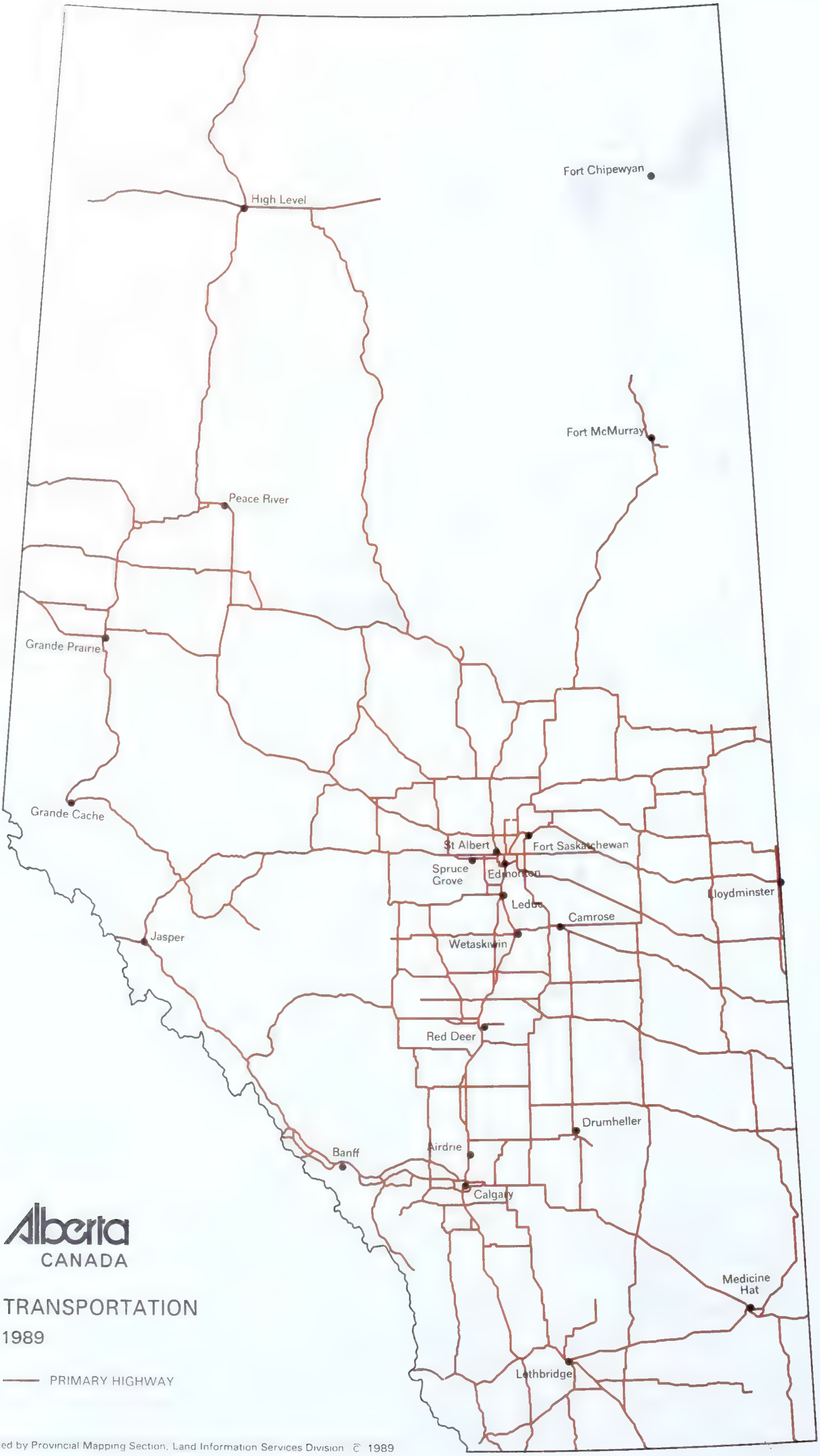

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## TRANSPORTATION
1989

— PRIMARY HIGHWAY

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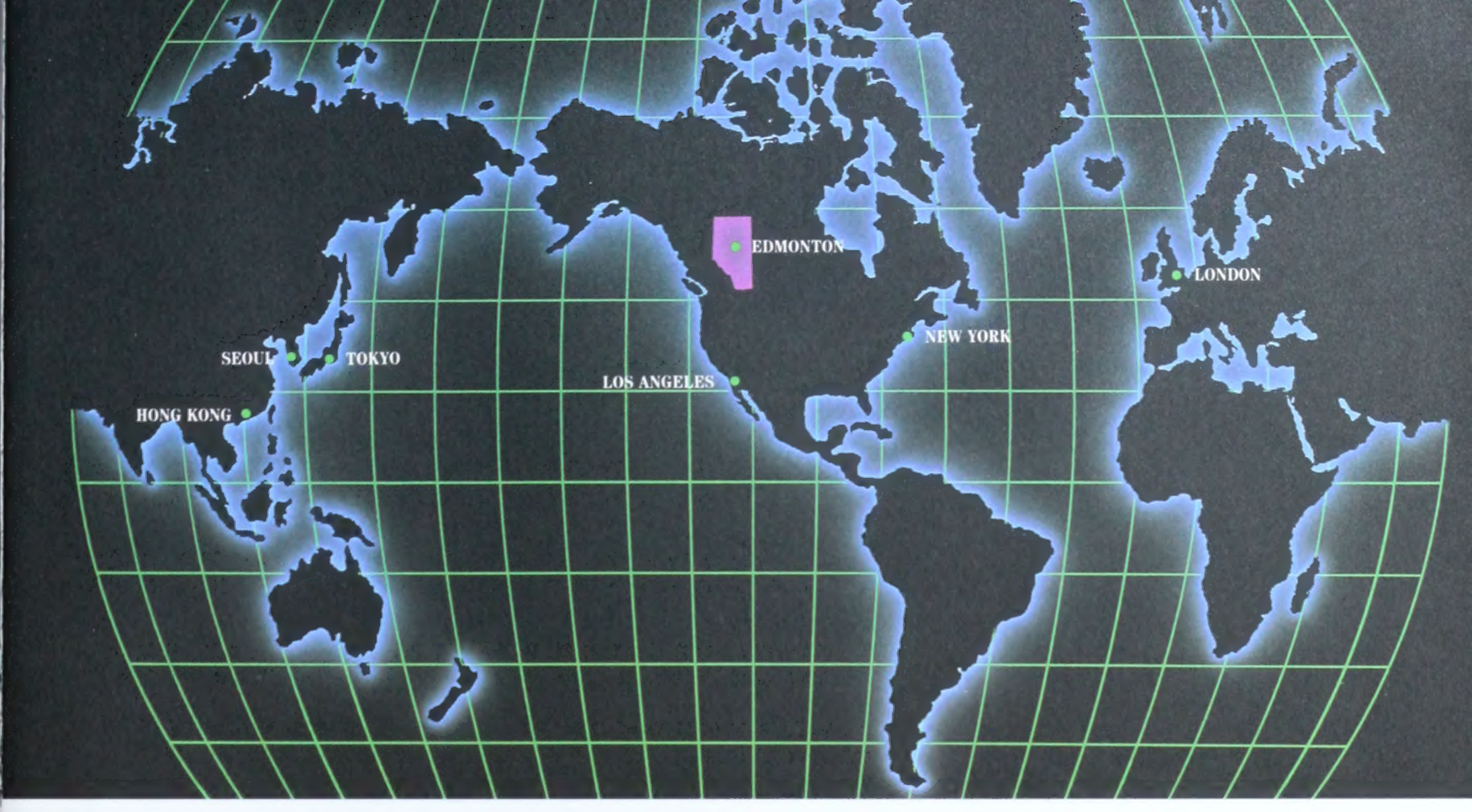
# NOTES



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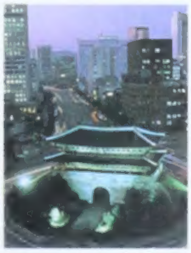

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